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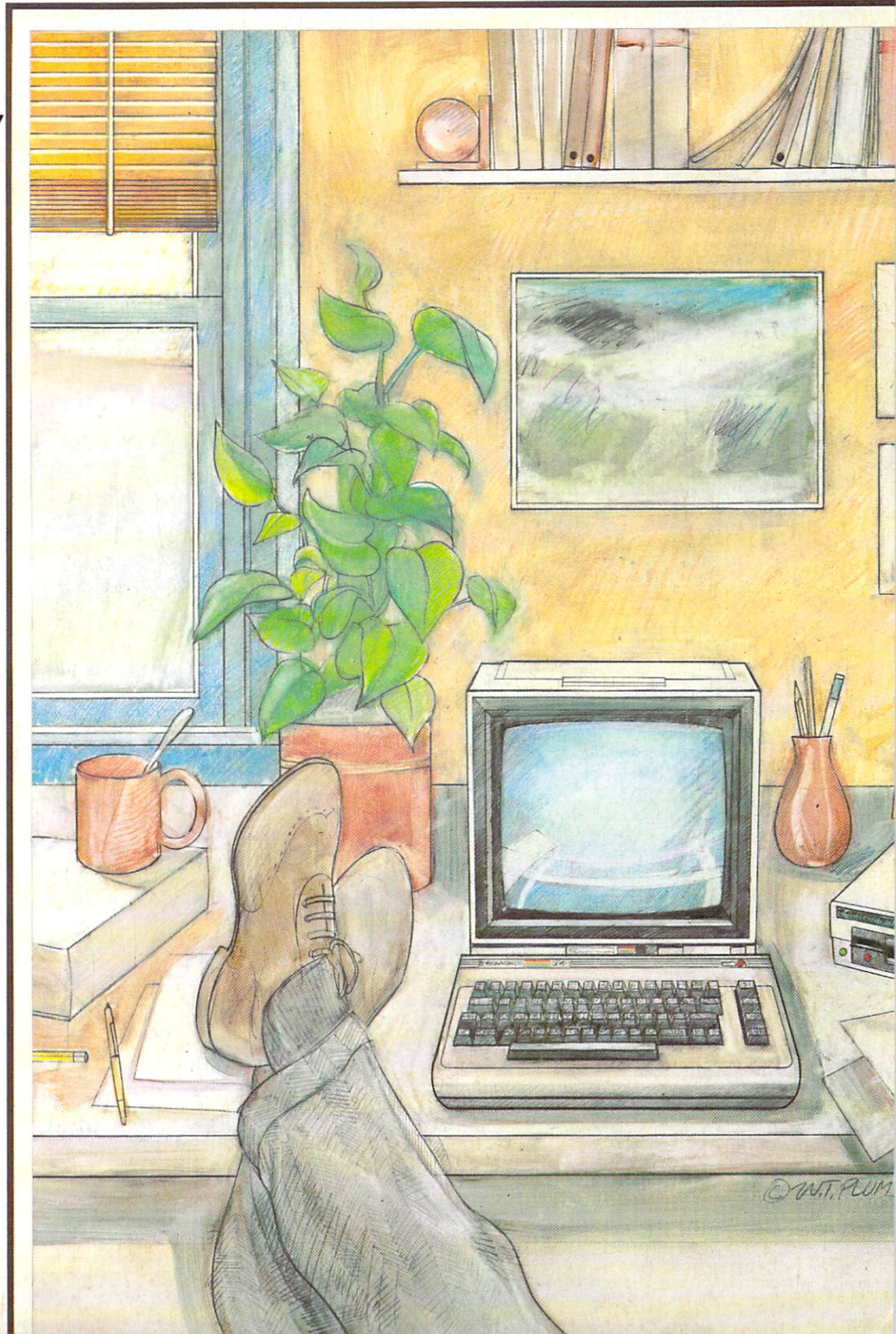

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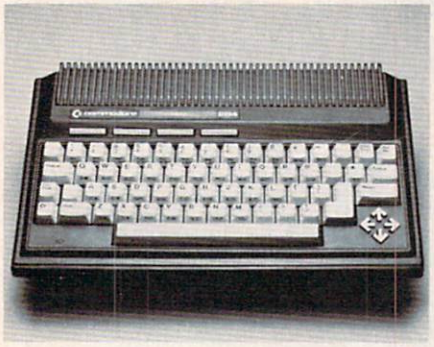

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EDITORIAL

The home computer seems to be in the midst of an evolution. Growing from a sophisticated toy for children and adults to a useful fixture in many homes and businesses. The consumer is overcoming a natural fear of the untried. We are discovering the scope of chores that can be accomplished with our Commodore. As with electricity, the telephone, television and most recently the microwave oven, it takes time before many of us accept the technology at our disposal. How many of us have heard stories of the early days of the telephone? It was thought to be the work of the devil, and certainly had no useful place in society. How many of us have a friend who wouldn't be in the same room with a microwave? The mystique surrounding new inventions first must be approached with cautious exploration, and then accepted for practical application.

The media has bombarded us with commercials pointing to the capabilities of a personal computer. The expert programmers and the development of user friendly software has provided us with the means to keep our checkbooks balanced, keep home and business inventory records, or help us through the dreaded tax season. We even have diet, exercise, and relaxation information at our fingertips. Computer hobbyists spend long hours with their VIC or 64 creating programs tailored to their own needs, or just for the pleasure of accomplishment. Children still play with the computer, but in many instances it has become a valuable learning tool.

The staff of *COMMANDER* is pleased to be a part of the changing role the computer plays in our daily lives. We do appreciate input from our readers. If you have comments, suggestions, or ideas, we would like to hear from you.

An Important Bulletin for Home Computer Users

This is the only programming system you'll ever need for your home computer.

If you own a small home computer, the story we're about to tell you could be of great help. It's about a revolutionary new software programming system that will let you and your entire family take full advantage of that machine you bought. But first things first, so here's a list of the home computers this product was specifically designed for: Atari 400, 600, 800, XL Series; Commodore Pet, VIC 20 and 64; IBM PCjr; TRS-80 color computer; TI-99/4A and the Timex Sinclair 1000, 2048 and 2068. If you own one of these computers, it would be well worth your time to read further.

THE PROBLEM WITH HOME COMPUTERS

As you probably know, the problem with these small computers is how to get good software into them. Keyboard entry is too time consuming. Diskettes do the job well, but the loaders are expensive and so are the diskettes. Cassette loading is less expensive, but the cassettes themselves still aren't cheap and sometimes a program has to be read again and again before it actually is entered. Furthermore, few of these software manufacturers guarantee their product to run at all.

So unfortunately, a lot of these potentially useful computers are relegated to just game-playing or, even worse, they find their way onto a closet shelf somewhere behind the bowling ball or last year's magazines.

THE SOLUTION IS DATABAR SOFTWARE

Now, thanks to the engineers at Databar Corporation, you can bring your computer back to life. They have developed OSCAR—which stands for an Optical Scanning Reader. What it does is read a bar code program in much the same manner as your local supermarket reads the bar code information on your grocery products. OSCAR plugs directly into your computer, and can read even complex programs extremely fast. In fact, in a recent time test it took a graduate computer programmer 1 hour, 9 minutes and 43 seconds to successfully type-in a program. To enter that same program, it took an eight-year-old child with no computer experience only eight minutes and 17 seconds.

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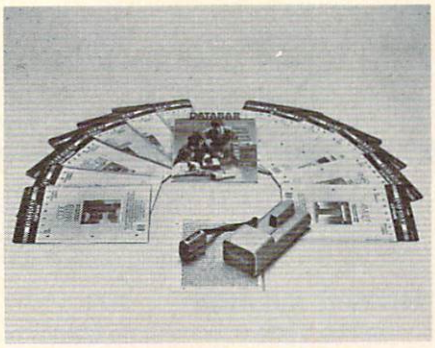

But, just because they cost less doesn't mean they aren't of the highest quality. In fact, they are so good and reliable, we are almost alone among software manufacturers to guarantee our product to run as advertised.

Databar Corporation has already developed an extensive library of programs ranging in subject matter from non-violent games to science, health, home management, writing skills and more. These programs are readily available at your local computer store and they retail for under $10 (about 1/3 what a diskette costs).

THE DATABAR CLUB

But amazingly, you can get great software programs for an unbelievable $1.25 each—if you choose to join the Databar Club. Every charter member gets 12 monthly issues of the Databar magazine each featuring at least eight great programs. In addition, this family oriented magazine also features articles on related subjects and computer use in general. The subjects covered by the software include: games, home management, classroom learning, health, law, science, writing skills, and computer programming. What's more, Databar Club members get a three-ring binder for their software programs as well as eligibility for exciting contests.

But whether you join the Databar Club or purchase individual program packages from your favorite retailer—OSCAR can dramatically change the amount and quality of the use you get out of your computer. And let's face it: in the not so distant future much of an individual's competence will be tied up in how well he or she interfaces with a computer.

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News, Views, Previews & Reviews

by Colin F. Thompson

SCARBOROUGH FARE

"Learn to type or get blown to bits!" was a challenge I couldn't refuse. I've been willing to learn to type for a long time, but couldn't locate a program to teach me. All of the programs I bought under the generic name "typing tutor" proved not to be tutors at all, but refresher drills for the typing skills I never had. I wanted a program that would instruct my fingers in the fine art of touch typing. Unfortunately, I didn't take a typing class in school, so now as an adult, I'm paying the price.

MASTERTYPE

The ads for Mastertype play up the concept of learning while playing a game. The ads may appeal to the younger set, but didn't attract me. I wanted to learn, not play games. Eventually, my desire to learn overcame my reluctance to play and I bought the program, hoping it wouldn't be too juvenile.

Mastertype is not a kids' game. It is a sophisticated learning system that actually works. The "game aspect" is quickly forgotten because you have too many things to think about during each lesson.

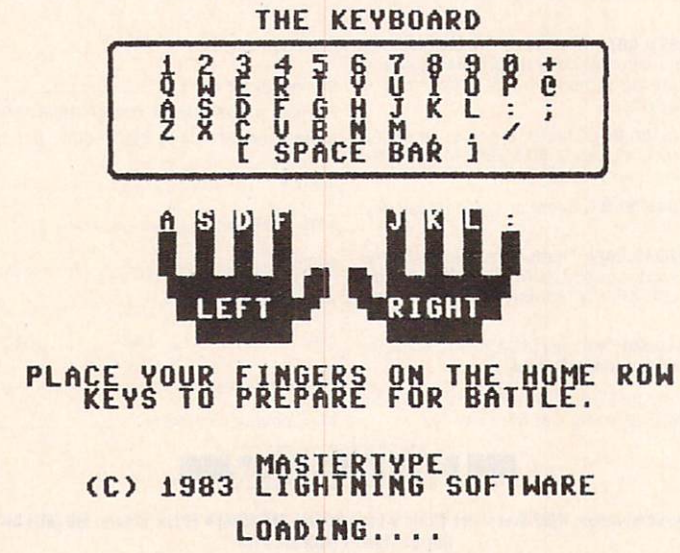
HOW IT WORKS

The most important feature of Mastertype is pacing: You progress at the pace you set. The program works well because you get very involved in each lesson. There are 18 lessons that teach the different skills needed to be a touch typist. Lesson 1 starts with the Home Row of keys-ASDFJKL: and GH. What you see on the screen does not vary with each lesson. In each of the four corners is a letter, letters or a whole word. Next to each of the letter groups is a sprite depicting some sort of Enemy Spaceship. The center of the screen has your flying saucer. The object is simple and never varies. You must type the letters or words in the corners and then hit the space bar. The letters you type appear inside the flying saucer. When you successfully type in one of the words, a magician appears on the outside of your ship and sends a bolt of lightning into the enemy ship associated with the word you typed. The evil ship blows up and may be replaced with its twin in the corner of the screen with a new word for you to type. The tension you experience comes because the evil ships are constantly moving from the corner to the center of the screen. If you don't type the word fast enough, the ships collide.

You control the speed of the enemy ships by setting the typing speed in Words Per Minute. If you set the speed at a leisurely 10 WPM, the ships come at you very slowly, giving you plenty of time to destroy them. As your skills improve, you should set the speed higher and expect the ships to come in faster, forcing you to type faster. Mastertype's menu is amazingly simple to understand. Each lesson segment sends three or four waves of enemy ships at you. When you have shot them up, or been blown to bits yourself, the menu appears and gives you detailed results of the session. Your highest speed and average speed is given along with the number of typing mistakes you made. You are rated and told to either continue with the current lesson or advance to the next.

You don't have to do the lessons in order, but if you begin as a rank novice like me, I recommend it. I also found that I learned better by setting the speed low and repeating the lesson many times until my fingers finally knew which keys to press automatically. You can really get caught up in the tension the program creates. My typical session lasts less than half an hour. If I extend past that time, my eyes glaze over and I begin to behave like an addict. Perhaps kids have more tolerance.

Does Mastertype really work? Yes, I saw an immediate improvement in my speed and error rate after the first session, and I


THE KEYBOARD
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Q W E R T Y U I O P @
A S D F G H J K L : ;
Z X C V B N M , . /
[SPACE BAR]
A S D F
J K L :
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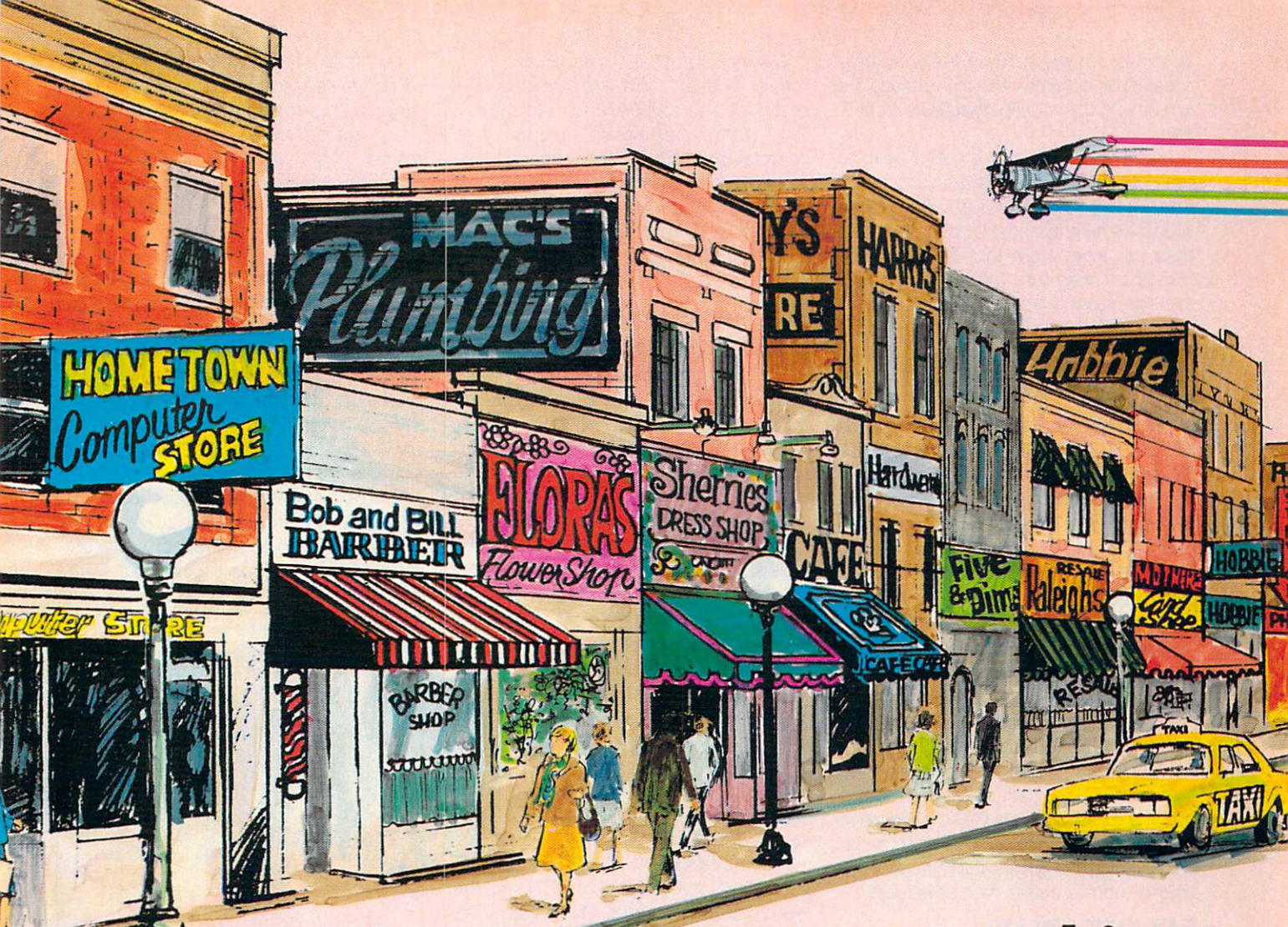

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continue to improve. I think the program is useable by children. The instructions are simple and the concept teaches by repetition.

I gave the program to a skilled typist to see how she would react, thinking that if one knows how to touch type, there would be no challenge. Wrong—I had to drag her away from the computer. She thought it was fun. (I would too if my average score was 82 WPM). When I began a few weeks ago, my average was about 10 WPM. My two sessions a week have raised it to 37 WPM with few mistakes.

Mastertype is available on disk for the VIC and C-64 for $29.95 and $39.95. A C-64 cartridge version is due, but no price is given. Available from Scarborough Systems, 25 N. Broadway, Tarrytown NY 10591.

SAM WHO?

By the time a review appears in this column, I have invested at least several weeks investigating the program in question. If I don't spend enough time trying to "break" a program, the resulting review may be flawed and you gain nothing from it. I am making an exception here. In the two weeks I've had SAM, I've found nothing to convince me that it is flawed in any manner, and the program is so much fun, I've decided to give it a mini-review a couple months earlier than scheduled.

SAY "MY NAEME IS SAAMM"

SAM is a speech program that doesn't need an external hardware device like the Votrax based systems. SAM comes on disk for the C-64 and is ready to begin talking through your TV set in minutes. Yes, TALKING, because the C-64 has something no other computer has: The SID chip, which generates complex tones and music. SAM and SID (they sound like a vaudeville act) were made for each other. The idea is simple. You tell SAM what words to say and SAM tells SID how to say them. It's really that simple.

My favorite trick now is to invite an unsuspecting friend over to the computer room. (It used to be an apartment, I think). Before my victim arrives, I load SAM into the computer and activate him. Then I load a simple BASIC program that I wrote in ten minutes. This program lets me key in words, phrases or whole sentences. After my message is typed in, (in English), SAM actually speaks the words through my stereo system's speakers. Can you imagine walking into a room and being greeted by a computer that knows your name and asks how you are feeling and whether the traffic was bad?

The scene that follows never varies. The former "victim" now sits down at the keyboard and tells SAM to start talking. SAM, I must warn you, will say anthing, so parental guidance is recommended. I've owned six microcomputers in the last three years, but I have never seen a program cause so much excitement and fun as SAM on the C-64.

SAY "BUTT HOWE DUZZ ET SOUNDD.?"

SAM has an accent. His speech varies with the words you tell him to say. The important thing is that he knows English. He knows how to say most words, but will sometimes be fooled by the inconsistencies in our language. Dipthongs tend to confuse him. The easy way to make SAM speak clearly is to experiment with the spelling of the words you give him. First try the correct spelling. If that sounds jerky, play with the spelling. In no time at all, SAM will be speaking clearly.

SAM has two modes of operation. "Reciter" is the easiest mode to use. After SAM is loaded, some new BASIC commands are available. They include SAY. The syntax goes like this:

```
10 ]RE: rem selects reciter mode
20 SAY "HI THERE. I'M SAAMM.": rem says your message
```

As you can see, SAY acts like a PRINT command, but instead of PRINTing the words inside the quotes, it SAYs them. This opens up a whole new field of possibilities for BASIC programming. Instead of prompting messages being sent to the screen, SAM could SAY them in English (or Spanish, or any language). The one inconvenience I found with SAM is that he blanks the screen when he talks. This could be disconcerting in some situations, but I am getting used to it.

The other mode is called SAM, and is invoked by]SA. This mode uses the international phonetic alphabet. I have made no attempt to learn this, but the user manual has an explanation and a dictionary of word spellings. The following example is taken from the demo program on the SAM disk:

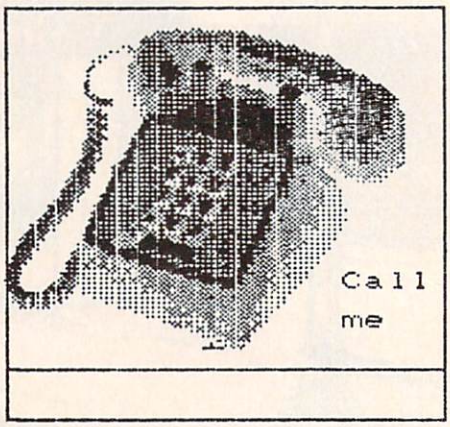
```
126 SAY "FOHR YOHR KAA4MIX DOH6R SIH4KSTIYFOH6R KUM PYUW4TER."
```

The SAM mode lets you set the speed, tone, inflection and duration of the speech. The result is clearer speech than in the Reciter mode, but you need to learn some new skills to spell using the phonetic alphabet. By the way, line 126 says "for your Commodore 64 computer". Three demo programs are included on the disk that demonstrate how SAM talks and sings.

Less than a half hour elapsed from first trying SAM to modifying one of my BASIC programs to speak. The process is very easy, and produces some gratifying results. SAM was written by Don't Ask Software and is distributed by Tronix. It is available on disk for the C-64 for $59.95.

VIC PICKS

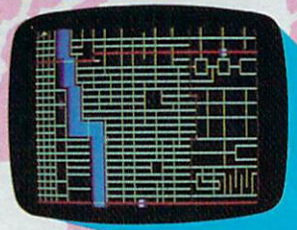
Video art is currently riding a crest of popularity made possible by some very creative programmers and Commodore video technology. The first tool of the new art form, the joystick doodle program, surfaced just after the VIC made its debut. These programs were primitive affairs that allowed you to draw a series of dots on the screen with a joystick as your paint brush. I've collected several of these doodlers because they are fun to play with, but none of them have all the features I consider necessary to be a complete, functional tool.



Midwest Micro's Vic Pics is the most complete package I've seen yet. It has most of the features I need and the price is reasonable. The C-64 version is called Panorama—I haven't seen it but Midwest Micro's President Dr. Jim Rothwell describes it as functionally the same as Vic Pics, but with higher resolution. He goes on to say, "The programs are designed for children of all ages. The menu is 'circular', meaning child [or adult] can go to any mode from any other mode with a single keystroke. The product has been tested extensively in schools and has received high marks for ease of use and usefulness."

I was originally drawn to Vic Pics because the package comes with 19 pictures, already drawn, that may be edited and then saved for later recall. That was important to me because I can't draw. The pictures include several cartoon characters, animals, portraits, flowers and the Space Shuttle. Once a picture is displayed on the screen, I can change, erase or add to it with the joystick. For me,

London Blitz



The streets of London are threatened with deadly V-1 rockets. You, as a member of Her Majesty's Royal Bomb Squad, must disarm each one before its timed fuse detonates. A variety of bombs with infinite defusing combinations make for endless nail-biting excitement.

A combination of logic, skill and a little luck is required in this highly-acclaimed computer masterpiece.

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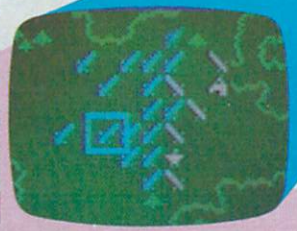
Disk for Commodore 64®, $25
Playing time: 20 minutes to 3 hours;
Intermediate complexity level

Legionnaire



The beat of barbarian war drums echoes through the valleys of Gaul; the crack legions of Imperial Rome are on the move. Outnumbered two-to-one by multitudes of heathen infantry and cavalry, you, as Caesar, must select your terrain and tactics carefully or face annihilation. Beautifully detailed scrolling map lets you examine the entire battlefield in this realtime game of ancient warfare.

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Panzer-Jagd

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Not just an arcade shoot'em up, **Panzer-Jagd** requires careful tactical planning and, above all, a determination to win. Hi-res graphics and sound effects.

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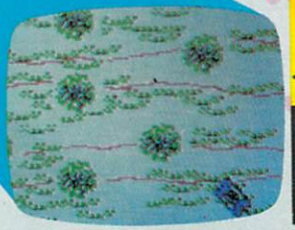
64K Disk for Commodore 64®, $30
Playing time: 1-4 hours; Intermediate complexity level

T.A.C.



The wooded plains of Germany are furrowed once again by the steel monsters, the armored fighting machines of WWII. In this realistic tactical wargame, you choose your force from a variety of WWII era armor and infantry. Design your own scenario or select one of those provided and pit your German, British, American or Russian forces against that of a friend or play solitaire vs. your computer.

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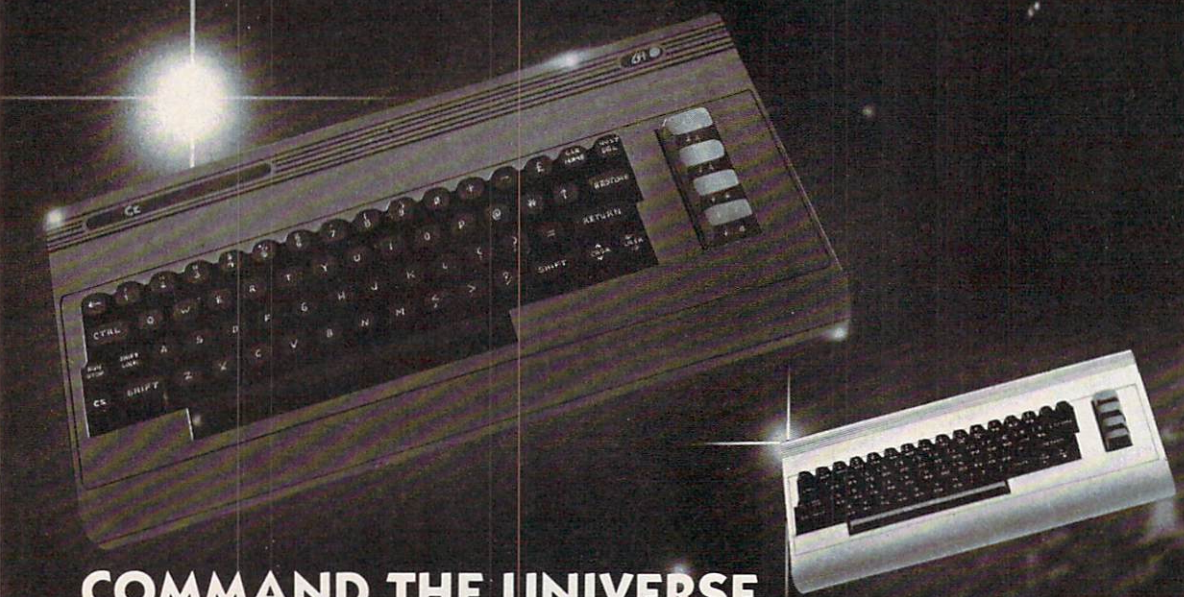
The COMMODORE-USERS' Monthly Journal

COMMANDER

C64

VIC-20



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the best part is being able to print the pictures on my dot matrix printer. I've included an example here that was done on my NEC8023A which is connected to the VIC through the Cardprint G+ interface. The Cardprint G+ turns my NEC printer into an electronic clone of the VIC 1525 printer. Vic Pics will also print to any Epson, Gemini or Okidata printer.

If you want to start with a blank screen and create your own art, you just press one of the function keys and the screen clears, giving you a blank canvas. A small 'gunsight' in the center of the screen shows where the next dot will be painted by pressing the fire button. You may draw three different brushstroke widths, and also erase the same way. If you want to draw a line from one point on the screen to another, you press a key to enter that mode and then draw a dot at the beginning and end of the proposed line. The program then paints the completed line for you. Erasing may be done in the same way. To give your picture some texture, you may create a custom character (pattern) and have the program paint it onto the entire screen as a background. Text may be inserted anywhere on the screen so you may caption your electronic works of art. You may save your drawing to disk or tape at anytime and then retrieve it later for viewing or further editing. I would like to have the option to 'fill' enclosed areas, but Vic Pics doesn't do it.

The drawing screen is not just a portion of the VIC's screen but the entire screen. The speed of the gunsight may be changed from very slow, for detailed work, to very fast for drawing borders or moving to a different part of the screen. Since the program uses the High Resolution mode, your artwork is drawn in only one color, but you may select the colors for the art, background and border. These colors are saved along with the picture. Error checking is extensive. I wasn't able to crash the program. A disk utility menu allows you to SAVE, LOAD, RENAME, COPY and get a directory.

A separate program on the Vic Pics disk lets you paint circles on the screen. Since circles are nearly impossible to paint by hand, this is a useful addition. Vic Pics and Panorama are available from Midwest Micro, 311 W. 72nd Street, Kansas City Mo 64114. (816) 333-7200.

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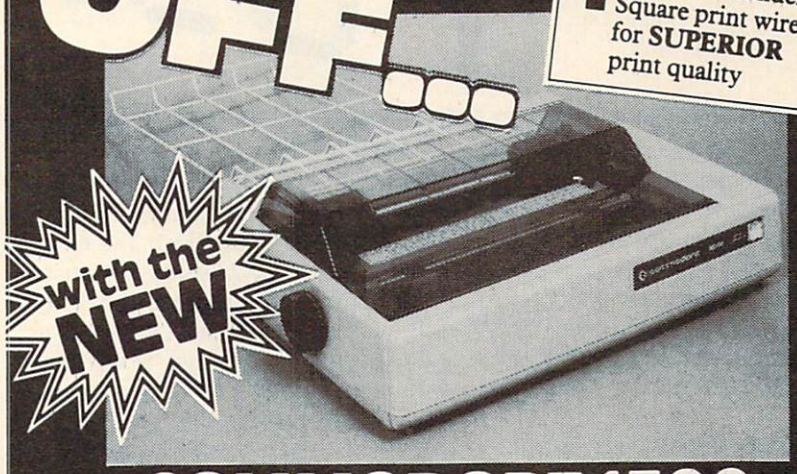

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the quick brown fox jumped over the lazy dog.

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Print Direction: Bi-directional (logic seeking) in text mode; uni-directional in bit image graphics mode

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- Block character graphics—7x8 dot matrix
- Bit image graphic—Vertical 7 or 8 dots

Character Set:
- 228 ASCII characters—normal and alphanumeric fonts, symbols and semi-graphics

Dot Graphics Density:
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- Horizontal compressed—1,280 dots/208.2 (8 in) line

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COMMAND POST

By Jim Grubbs

This month, you can put away the soldering iron, forget about finding parts and just think about programming. Sometime back I mentioned that amateurs are finding that their VICs and 64s do a very good job at taking the tedium out of the paper work end of ham radio. This month's program addresses the problem of avoiding duplicate contacts during contests.

Command Post Dupe is a very straightforward and simple program. It can be easily modified to suit your particular application. It will work on either the VIC or 64 with no modifications. It even works on the unexpanded VIC, though you may run into trouble if you try and put too many calls in it. While the program is simple, I have tried to write it to demonstrate several programming techniques that should be of help in almost any program you may write.

The program is menu driven, will work with either tape or disk storage and even allow you to transfer files from tape to disk or back again. All of the prompts have hopefully been arranged to be foolproof. Let's take a look at each section of the program and discuss in some detail each of the programming techniques used.

COMMODORE ALA CARTE

The very first line of the program dimensions the M$ array where we will store the entered call signs in the computer's internal memory. We do this first because it will set aside memory for use later. It is very frustrating to start running a program and have everything seem fine, only to find that somewhere later in the program it tries to dimension an array only to find there isn't enough memory left!

Lines 10 to 70 are the first stop on our trip to good programming. This creates our menu. From here we can get to any part of the program with ease. If you are designing your own software, this step should never be overlooked. The menu should be graphically pleasing. If you have a color monitor, you may wish to "color code" each operation with screen color and character color changes. Since I must write our Command Post programs so they will run on everyone's machine and accessories, I have omitted the special color and sound considerations in the program. Note that in line 60 the user's response is received with a GET statement rather than an INPUT statement. This takes a bit more programming, but the result is a program that operates more smoothly. If INPUT were used, a question mark prompt would appear on the screen and it would be necessary to press the return key after entering your choice. With GET all we have to do is press the number corresponding to the option we want. So what happens when your wise guy friend walks up and deliberately gives it an invalid choice? The second part of line 60 is the "gotcha" . . . it won't pass anything but a legal value!

This technique will work well as long as you only have ten or fewer items on the menu. There are several ways around this. Let item nine on the main menu take you to a secondary menu with still more options. Particularly on a VIC, you run out of screen space with about ten items on the screen anyway.

Once we make the decision on which sub-program we want to run we need to "branch" or GOTO that section of the program. Many of my early programs are chock full of IF such and such is true THEN GOTO line so and so. The ON statement used in line 70 puts all of those statements in one command. If the first option is chosen ($x = 1$) then the program goes to line 1000 and continues. If option five is selected then the program will go to line 200. It's now time to actually go do something with this program other than stare at the menu. Since the main purpose of Command Post Dupe is to check for duplicate contacts, let's choose option five and branch to line 200.

DON'T REPEAT YOURSELF

Once again let's take a good look at the prompt in line 200. First, notice that the screen is cleared before we put anything new on it. It seems obvious but many folks keep the screen cluttered with old information and just let it scroll off when the screen gets full. Also note that the request for information is very specific and it gives you a way out. In this particular case, we can't do a lot of screening, nor can we use the GET statement since our input will be variable in length. Line 210 sets C$ equal to a null set (""). If we don't do this our trusty computer uses the last value for C$ when we hit only a return. This is another area beginning programmers often overlook when they get unexpected results. Until you change it, the computer stores the last known value for both strings and variables.

Remember the array dimensioned in the first line? Lines 230 to 250 check this array to see if the call we just input matches anything already stored. If (or when) it does, the program will branch to line 600, the "duplicate" routine. If not, we are told that the call has not been found and we are given the option to add it to the list. The key point is that we have the option to do this. Once again we can abort the operation by answering with an "N". As before, the prompt is clear and

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concise. We can use a GET statement again because we have limited our acceptable responses to "Y" and "N". Line 300 screens us from illegal characters. In plain English, it says if A$ is anything other than "Y" then go back and get A$ again. We already checked for an "N" response in line 290. The next few lines add the call to the memory for future checks. Finally we go back to the input prompt in line 200.

It's time to get back to the menu. Typing 'R' will take us back to line 10 where our menu starts. Our other menu options include loading an already existing file or saving our current file. Either tape or disk can be used interchangeably. This gives us a chance to explore some very simple data storage and file handling.

IN THE BEGINNING, THERE WAS TAPE

Cassette tape storage of computer programs often gets some bad press. The truth is, it is inexpensive, very large amounts of data can be stored, and the Commodore tape system is the best in the personal computer industry. Just ask some of your friends, even the Apple owners, how many load errors they get . . . it will be a revealing experience! The drawback of course is speed of access. Oh well, it gives you something to ask Santa for next year.

When you SAVE or LOAD a program using cassette tape, the computer uses some default values to make your life easier. When we save a file of data, in this case our duplicate call list, we have to use the mysterious OPEN statement. You can think of this as opening a file cabinet so that you can either take out a particular folder or put one in. The only thing that makes it difficult is that now we must specify the values ourselves rather than letting the computer default to normal values. Actually, from a programming standpoint, the OPEN statement is the same whether we use it to send information to a printer, get data from our RS-232 port over a modem, save or load a file from tape or disk, or any other device we might come up with. Each type of device has a device number. The cassette is device 1, the disk drive is normally 8, the keyboard is 0 (zero), the printer 4 and so on. This should not be confused with the file number which can be anything from 1 to 255. Specifics are always better than generalizations, so let's elect to load a duplicate file from cassette. Selecting option one from menu, the program branches to line 1000.

Lines 1000 to 1130 encompass our cassette load routine. The first two lines once again give us concise instructions and a way to get out. Since the length of our input is variable again, an INPUT statement is in order. In line 1020 the OPEN statement makes its debut. What does it really mean? Once again translating into plain English, it says, "Let's allow the file that the programmer has labeled number 1 to be loaded from device number 1 (the cassette). Further, the 0 (zero) insures that we will be reading the file only and F$, our file name is much like when we type LOAD CMD POST DUPE. That is, the computer will search for that specific file name and won't do anything else until it finds it. With cassettes, it is possible to enter simply a return at the prompt and the first file on the tape will be loaded.

OK, the tape is moving, the file has been found. What next? We need a traffic cop to insure an orderly transfer of our file from tape to random access memory. Remember what we do when we want input from the keyboard? We use either INPUT or GET depending on our particular needs. We have a special form of these messages for devices other than the keyboard in the INPUT# and GET# statements. In line 1040 we say, "get information from a previously opened file that the programmer designated as file 1 and let that be B$." We perform a quick check to see if B$ is EOT, our symbol for end of tape, and if not then we shove B$ into our array (M$). If we are at the end of our file, then we CLOSE file number one in line 1100. Remembering to close files is important. You can't get into too much trouble with tape, but forgetting to close files with disks can be bad news. Finally, we flash a "File Loaded" message on the screen and then return to the menu in line 1130.

SAVE ME

In order to have files to load we have to create them. Option number two accomplishes this for us. You may notice that the cassette save routine in lines 1500 through 1580 is very similar to the load routine with two exceptions. Look at the OPEN statement in line 1520. Notice that this time there is a 2 where we had a 0 before. This is the indicator to the computer that we want to write to the tape and that we want an EOT (end of tape) marker placed after the file. Line 1540 contains the other change. The PRINT# statement transmits the information to the cassette. That's it! You now have all of the tools you need to save a simple data file. You could even save a program this way. It would take much longer than the normal time, but it could be done.

PANCAKES AND SAUSAGE (Hold the Sausage)

All you folks with disk drives are saying, what about me? The next few paragraphs are just for you. Options three and four do for the disk what one and two did for the cassette. The disk load routine is located in lines 2000 to 2130. The save routine is in lines 2500 to 2580. Most of it looks suspiciously familiar. In fact, everything is identical except for the OPEN statement and some minor modifications to the INPUT# and PRINT# statements. When using an OPEN statement with a disk drive we specify the file number, in this case I chose two, the device number, normally 8, and then we have a new one–the channel number. For simplicity's sake, the channel number is usually equal to the file number, though it doesn't have to be. If any one out there is truly an expert on the Commodore 1541 DOS, disk operating system, I'll let you explain that one! Please note that the INPUT# and PRINT# statements must use the same file number, in this case 2, that we used in the OPEN statement. But we still aren't done. We then need to specify the name of the file, the type of file, and whether we are going to read or write to the file. Let's translate the statement in line 2020 into words. It says, "open a file that the programmer designated as number 2, on channel 2 to the disk drive (device 8) with a file name of F$ that is a sequential file and we want to read the file." Line 2520 has the equivalent write statement. Notice that the 'R' for read has been replaced with a 'W' for write. By placing "@Ø:" in front of our file name, the program will overwrite an existing file with the same name. Without that statement, you must make sure that you have selected a file name that isn't already in use. When loading a file from disk you can't just hit return like you can with cassette. You can, however, enter a "*" and the first file on the disk will be loaded.

Remember that all new disks must be formatted using the NEW command before you can save any kind of program or file on them. The following is an example: OPEN 15,8,15:PRINT#15, "NØ:DUPE FILE,DF":CLOSE 15. Such a statement would name the disk DUPE FILE and give it an ID of DF.A final caveat to VIC disk users. Remember that the 1541 is normally configured for the C-64. If you are using the 1541 with the VIC add this line at the beginning of the program: OPEN 15,8,15,"UI-":CLOSE15. Pancakes and Sausage? The magnetic media in a floppy disk is called a "pancake."

There is one final choice on the menu and that is the clear option. Selecting number six jumps us to program line 3000. There we find our, by now, standard, concise prompt, which in this case is also our way to abort. As soon as we enter "Y" our array is cleared and whatever we had in it before is gone.

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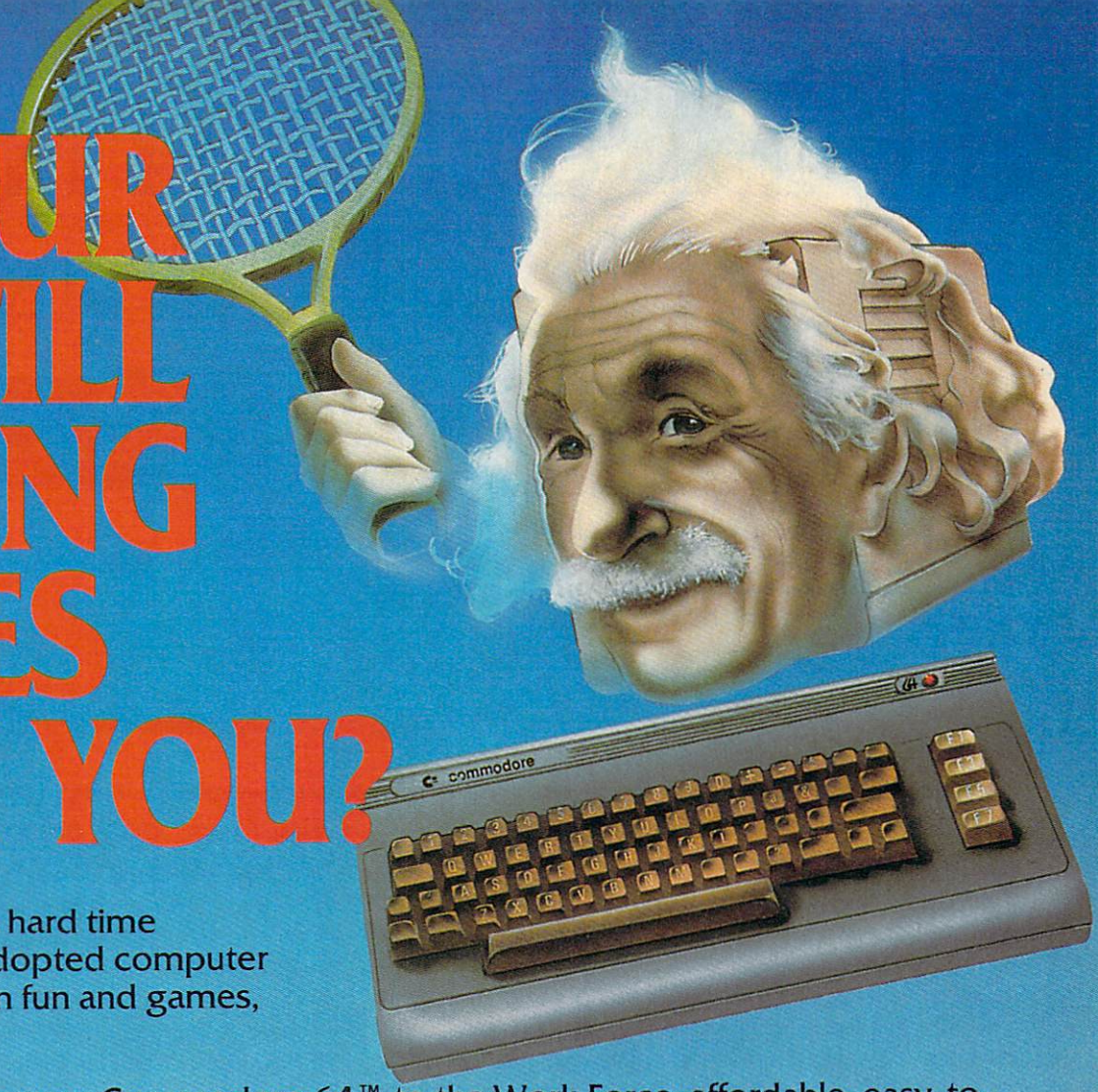

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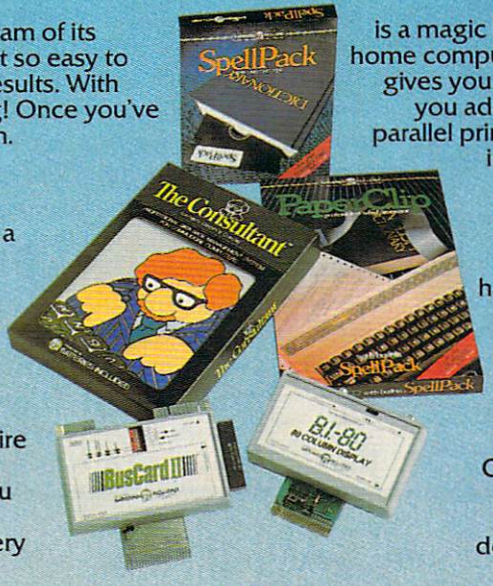

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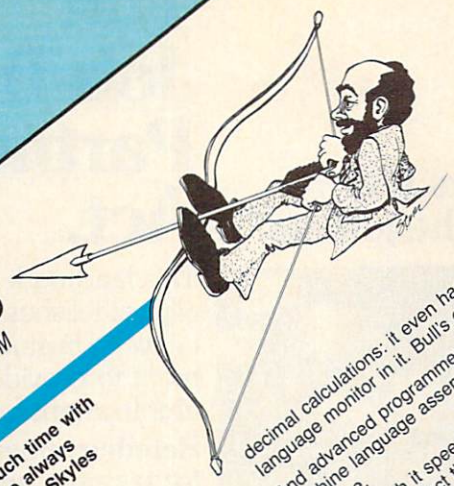
Circle No. 210



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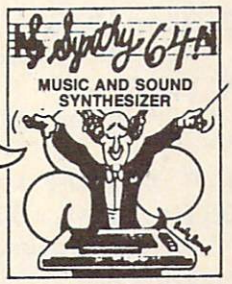

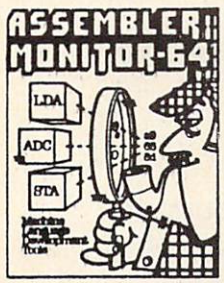

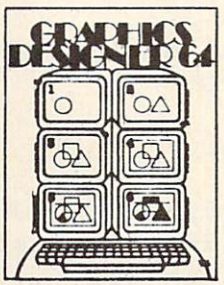

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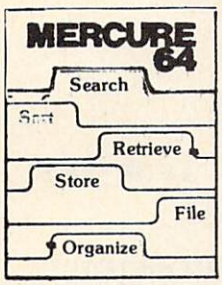

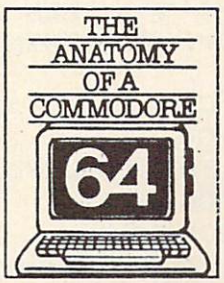

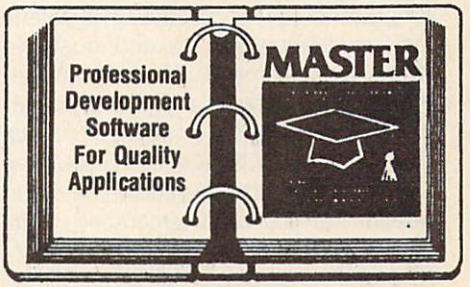

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I'm sure that there are many techniques to do what we have done in Command Post Dupe. If you try hard enough, you will probably find a way around the foolproof inputs. There's an awful lot of duplication in the save and load routines. Another approach might be to have only one routine that first asks if you want to save or load and then prompt for the device, cassette or disk. There are several places that require only a yes or no response. This could be written as a small subroutine to be called everytime such a response is required. I chose not to use these techniques in the interest of clarity.

Now you no longer will have to guess whether you have worked someone in a contest. With Command Post Dupe you will be able to enter each callsign as you talk to each station and perform a quick check when you aren't sure. You can save your files to tape or disk so that when you give up for the night or the power crashes, you will still have your list.

You can input anything into this program. The entries do not have to be call signs. That could come in handy at the registration table at a convention for example. John Smith walks up to register and you can't find his packet. If you have been entering the people as they register you can check to see if perhaps another John Smith got his material. In amateur radio applications you can distinguish between contacts made with the same station but on different bands. For example, you talked to WB9YJC on 40 meters. Enter that contact as WB9YJC40. Later you hear him on 10 meters. You know the call is familiar but you can't remember which band you worked him on. Enter WBA9YJC10 and no duplicate will show. If you hear him again later and enter WB9YJC40 it will show as a duplicate. The same trick can be used to distinguish phone from code and so on.

I told you it was simple! Now, in answer to your questions, yes . . . you can add options to the menu to sort the file, print the file, perhaps add a real time clock so the time is logged along with the call. It could even develop into a full fledged logging program. The idea is for you to work on some of these options yourself. We will look at this subject again in the future, but for now you have some good basic concepts for writing any program.

DAISY, DAISY

The computer HAL in 2001, A Space Odyssey, isn't the only thing good that ever came out of Champaign/Urbana, Illinois. The folks at the real HAL Communications Corporation, P.O. Box 365, Urbana, Illinois 61801, have introduced two computer interfaces, the model

```
  5 DIM M$(500):T=0
 10 PRINT''[clr][down, 2 times][sp, 2 times]
    [rvs-on]COMMAND[sp]POST[sp]DUPE''
 20 PRINT:PRINT:PRINT
 30 PRINT ''[rvs-on]1[rvs-off][sp]LOAD[sp]FI
    LE[sp]FROM[sp]TAPE'':PRINT
 40 PRINT ''[rvs-on]2[rvs-off][sp]SAVE[sp]FI
    LE[sp]TO[sp]TAPE'':PRINT
 50 PRINT ''[rvs-on]3[rvs-off][sp]LOAD[sp]FI
    LE[sp]FROM[sp]DISK'':PRINT
 52 PRINT ''[rvs-on]4[rvs-off][sp]SAVE[sp]FI
    LE[sp]TO[sp]DISK'':PRINT
 54 PRINT ''[rvs-on]5[rvs-off][sp]DUPE[sp]FU
    NCTION'':PRINT
 56 PRINT ''[rvs-on]6[rvs-off][sp]CLEAR[sp]M
    EMORY''
 60 GET X:IF X=0 OR X>6 THEN 60
 70 ON X GOTO 1000,1500,2000,2500,200,3000
200 PRINT''[clr][down, 2 times]ENTER[sp]CALL
    SIGN[sp]OR[sp]'R'[sp]TO[sp]RETURN[sp]TO[
    sp]MENU''
210 C$="":INPUT C$:IF C$="" THEN 210
220 IF C$="R" THEN 10
230 FOR Z=1 TO T
240 IF M$(Z)=C$ THEN 600
250 NEXT Z
260 PRINT:PRINT ''CALL[sp]NOT[sp]FOUND''
270 PRINT ''LOG[sp]THIS[sp]CALL[sp](Y/N)?''
280 GET A$:IF A$=""THEN 280
290 IF A$="N" THEN 200
300 IF A$<>"Y" THEN 280
310 T=T+1
320 M$(T)=C$
330 GOTO 200
600 PRINT:PRINT''DUPLICATE[sp]CALL'':FOR X=1
     TO 1000:NEXT
610 GOTO 200
1000 PRINT''[clr][down, 2 times]ENTER[sp]FILE
    [sp]NAME'':PRINT''YOU[sp]WISH[sp]TO[sp]L
    OAD'':PRINT''ENTER[sp]'A'[sp]TO[sp]ABORT
    ''
1010 INPUT F$:IF F$="A" THEN 10
1020 OPEN 1,1,0,F$
1030 Z=1
1040 INPUT#1,B$
1060 IF B$="EOT"THEN 1090
1070 M$(Z)=B$
1080 Z=Z+1:GOTO 1040
1090 T=Z
1100 CLOSE 1
1110 PRINT ''[clr][down, 2 times]FILE[sp]'';F
    $;''[sp]IS[sp]LOADED''
1120 FOR X=1 TO 5000:NEXT
1130 GOTO 10
1500 PRINT''[clr][down, 2 times]ENTER[sp]FILE
    [sp]NAME'':PRINT''YOU[sp]WISH[sp]TO[sp]S
    AVE'':PRINT''TYPE[sp]'A'[sp]TO[sp]ABORT''
1510 INPUT F$:IF F$="A" THEN 10
1520 OPEN 1,1,2,F$
1530 FOR Z=1 TO T
```

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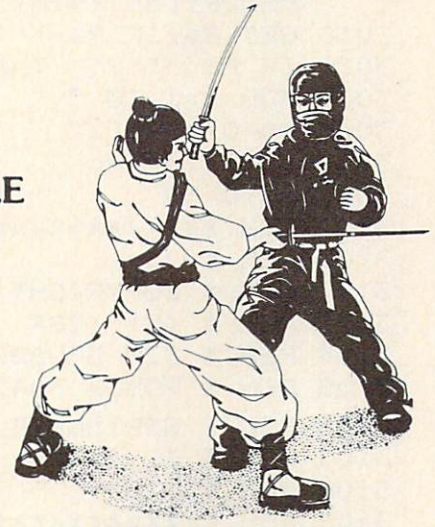

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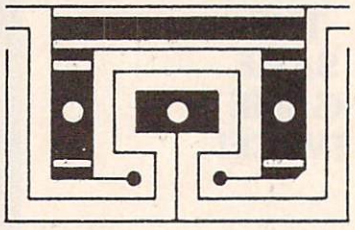
HAL is world renowned in the teletype field. They have been making some of the best RTTY demodulators for a long time. If you are in the market for an interface, it would be worth you while to get some more information on this one.

Do you know what kind of test Norwegian amateur radio applicants have to pass? It's a NORSE CODE test of course! See you next month.



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```
1540 PRINT#1,M$(Z)
1550 NEXT Z
1560 PRINT#1,''EOT''
1570 CLOSE 1
1580 GOTO 10
2000 PRINT''[clr][down, 2 times]ENTER[sp]FILE
     [sp]NAME'':PRINT''YOU[sp]WISH[sp]TO[sp]L
     OAD'':PRINT''ENTER[sp]'A'[sp]TO[sp]ABORT
     ''
2010 INPUT F$:IF F$=''A'' THEN 10
2020 OPEN 2,8,2,''0:''+F$+'',S,R''
2030 Z=1
2040 INPUT#2,B$
2060 IF B$=''EOT''THEN 2090
2070 M$(Z)=B$
2080 Z=Z+1:GOTO 2040
2090 T=Z
2100 CLOSE 2
2110 PRINT ''[clr][down, 2 times]FILE[sp]'';F
     $;''[sp]IS[sp]LOADED''
2120 FOR X=1 TO 5000:NEXT
2130 GOTO 10
2500 PRINT''[clr][down, 2 times]ENTER[sp]FILE
     [sp]NAME'':PRINT''YOU[sp]WISH[sp]TO[sp]S
     AVE'':PRINT''TYPE[sp]'A'[sp]TO[sp]ABORT''
2510 INPUT F$:IF F$=''A'' THEN 10
2520 OPEN 2,8,2,''@0:''+F$+'',S,W''
2530 FOR Z=1 TO T
2540 PRINT#2,M$(Z)
2550 NEXT Z
2560 PRINT#2,''EOT''
2570 PRINT#2:CLOSE 2
2580 GOTO 10
3000 PRINT''[clr][down, 2 times]DO[sp]YOU[sp]
     REALLY[sp]WANT'':PRINT''TO[sp]CLEAR[sp]
     MEMORY[sp](Y/N)?''
3010 GET R$:IF R$='''' THEN 3010
3020 IF R$<>''Y'' THEN 10
3030 FOR C=1 TO T
3040 M$(C)=''''
3050 NEXT
3060 GOTO 10
3100 REM ************
3101 REM *
3102 REM * COPYRIGHT
3103 REM * (C) 1984
3104 REM * JIM GRUBBS
3105 REM * POBOX 3042
3106 REM * SPRINGFIELD
3107 REM * IL 62708
3108 REM *
3109 REM ************
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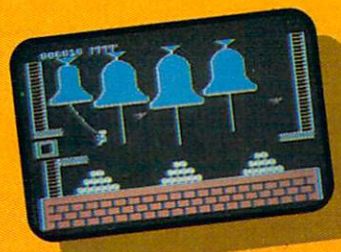

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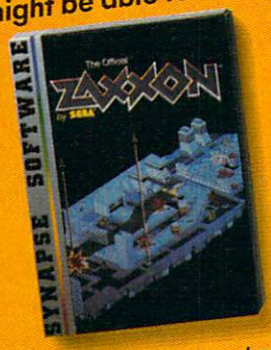

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REMs to Readers

Submitting Material to *COMMANDER* Magazine

We encourage everyone to submit articles/programs to *COMMANDER* for possible publication. If you have written an original program/article about a computer application, product, or educational approach, please send us a manuscript or letter of inquiry. Materials of interest to beginning, intermediate, and advanced programmers are welcomed.

Submitted materials should follow these guidelines:

1. Articles must be typed double-spaced, in upper and lower case on 8½" x 11" paper, with at least 1½" margins on all sides. Good quality printers may be used if the output is clear and dark. Two copies of each article should be included.
2. Programs must be provided in both hard-copy listing and machine readable form (disk or tape). Where feasible, please include both C-64 and VIC-20 versions.
3. Each page should include your name, title of the article, the date submitted, and the page number. Any accompanying listings, photos, graphs, etc., must be clearly identified.
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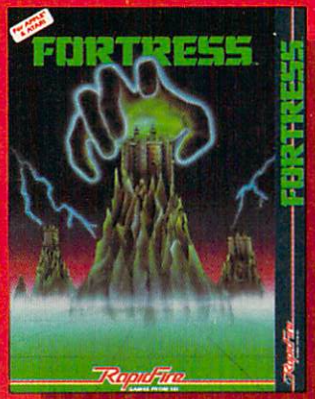

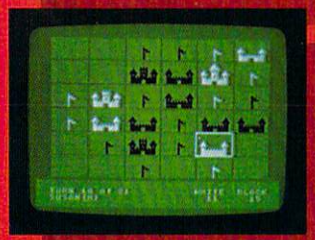

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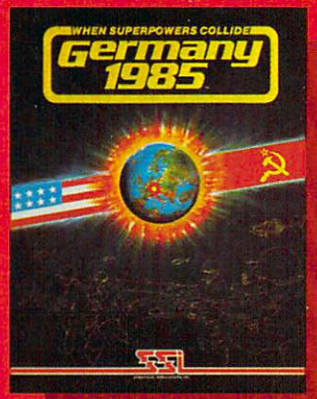

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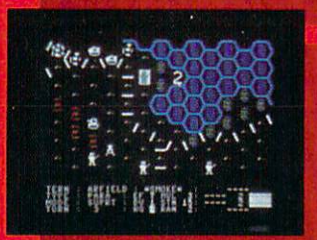

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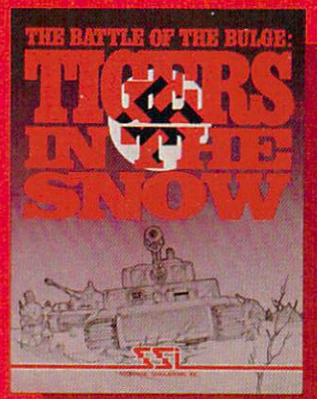

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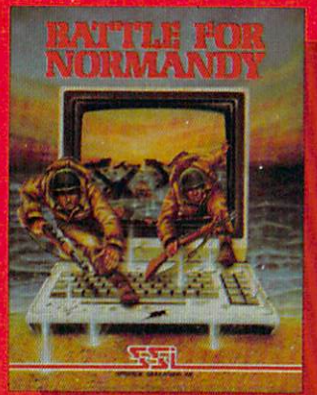

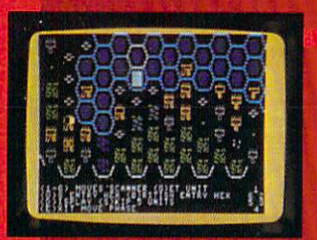

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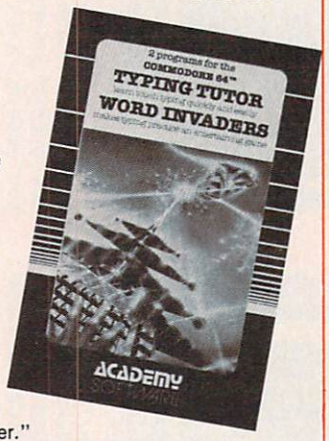

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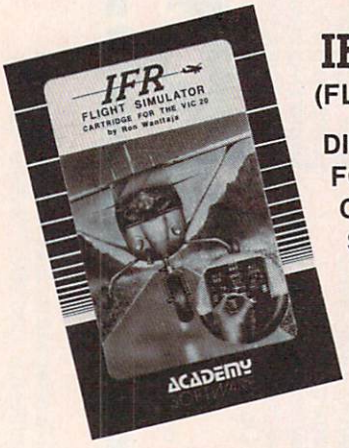

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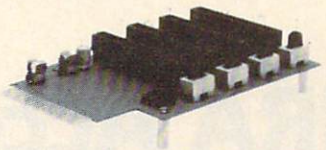

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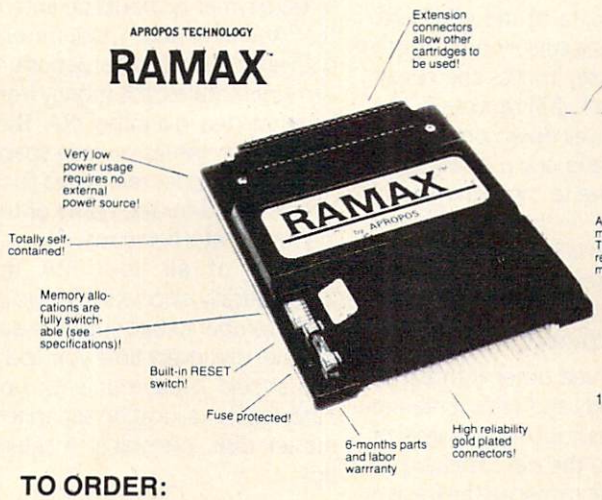
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IRA Account Database

By Robert Parr

BACKGROUND

What is an IRA? Simply stated, an IRA (Individual Retirement Account) is a fund or collection of funds designated as retirement savings. Each year, the U.S. Government allows you to invest up to $2000 of earned income in an IRA fund. This base money, as well as the interest you earn from the account, is tax-free until the time you withdraw it.

It is possible to make IRA deposits up to age 70½, by which time all money must be withdrawn from IRA funds. However, you cannot withdraw money from an IRA before the age of 59½ without receiving severe penalties from the IRS. IRA investments that mature before this time *must* be rolled-over (reinvested) into other funds, or you will be penalized.

In order to prove to the IRS that you have abided by the tax laws, you must have an accurate record of all of your IRA transactions. This record is referred to as an *audit trail*.

The program I have written is designed for the specific purpose of keeping your IRA records in one place, allowing you to face any friendly IRS auditor with a snappy response (and possibly a smile).

PROGRAM OPERATION

When you first run the program, it asks you to enter your name. This entry serves as the title for the sequential disk file containing your IRA data. Therefore, it is important that you not make any mistakes in typing. If you do, press the [RUN/STOP] key, and *start over.* Although the [DEL] key will fix the entry on the screen, its character code is then added to the string that contains the file name. When you save the file, the [DEL] character will still be included in the name, and will later prevent you from retrieving the file.

The screen is basically a "window" that looks onto a larger "spreadsheet." At any one time, you are only able to see a portion of the "spreadsheet." A cursor is located in the upper left-hand corner of the screen within the current entry frame. By pressing [RETURN], you are able to make an entry or changes to that frame. Be sure not to enter commas when typing in data. Doing so will result in lost information and a mess on the screen.

Cursor movement is accomplished through the use of the four function keys on the right-hand side of the keyboard. The [f1] key moves the cursor one frame to the right; the [f3] key moves the cursor one frame to the left; [f5] moves up one frame, and [f7] moves down one frame. By holding [SHIFT] and any of these keys, you are able to move to the extreme end of the "spreadsheet" in that direction. For example, holding [SHIFT-f7] will move the cursor to the bottom row of the existing document, and [SHIFT-f1] will move the cursor to the last column on the right.

There are only three other commands to learn–Save, Load, and Print. Entering an [S] will cause the program to save all of your new entries to the disk. Pressing [L] causes the computer to re-load the file as it was when last saved, allowing you to start over when you make entry mistakes. When you have made an entry to the record, it is important that you print the updated record. This is accomplished by entering [P]. The computer will then prompt you for the current date, and print the entire spreadsheet.

DATA

When entering data, record the date that the IRA fund was purchased under the first column. The name of the fund in which you have invested your money should be entered in the second column, and your account number in the third. For your future reference, you will want to enter the full name and address of the individual or financial institution that is managing your IRA account. It is important that you specify the tax year for which the IRA investment applies, as deposits made early in the year can be applied for either the current or previous year. All interest payments should be entered under the "Annual Amount" column as separate entries from the original deposit. When an account matures, the money from it must be reinvested in another IRA. The seventh and eighth frames provide space for the amount of money reinvested (including all interest), and for the name of the maturing fund that is being rolled-over. The total balance of all your IRA money is automatically calculated by the program.

Remember to back up your data file on another disk every time you add an entry. You should keep your back up disk (or hard copy) in a location separate from the master disk, preferably a safety-deposit box.

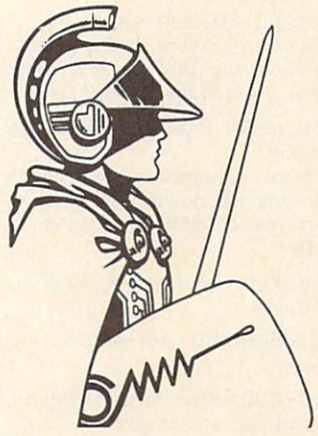
PROGRAM DESIGN

The program is organized as follows. The set-up routine is contained in line 10-165. Lines 170-610 print and maintain screen columns, and lines 620-1370 fill the frames with the proper data. The routine found in lines 1380-1500 draws the cursor, and cursor input and movement is hand-

```
 10 POKE 53280,15:POKE 53281,1:PRINT CHR$(152
    )CHR$(14)CHR$(8):GOTO 100
 20 PRINT ''[clr]'';:PRINT ''[right, 5 times
    ][shf-I]NDIVIDUAL[sp][shf-R]ETIREMENT[sp
    ][shf-A]CCOUNT''
 30 PRINT ''[right, 11 times][shf-I]NVESTMEN
    T[sp][shf-R]ECORD''
 40 PRINT ''[rvs-on]''N$''[rvs-off]''
 50 PRINT ''[rvs-on][sp, 40 times][rvs-off]''
    ;:RETURN
100 CX=1:CY=1:LY=1:T=0:DIM D$(9,255):GOSUB 2
    0:PRINT ''NAME:*[left]'';
110 GET NN$:PRINT NN$''*[left]'';:IF NN$=CHR
    $(13) THEN 130
120 N$=N$+NN$:NN$='''':GOTO 110
130 GOSUB 20:PRINT ''ADD[sp]ONTO[sp]PREVIOUS
    [sp]RECORD[sp](Y/N):*[left]'';
140 GET ZZ$:PRINT ZZ$''*[left]'';:IF ZZ$=CHR
    $(13) THEN 160
150 Z$=Z$+ZZ$:ZZ$='''':GOTO 140
160 IF LEFT$(Z$,1)=''Y'' THEN GOSUB 9000
165 GOSUB 7000
170 GOSUB 20:GOSUB 2460:Z=0:IF CX=1 THEN 270
180 IF CX>1 THEN Z=Z+9
190 IF CX>2 THEN Z=Z+11
200 IF CX>3 THEN Z=Z+10
210 IF CX>4 THEN Z=Z+21
220 IF CX>5 THEN Z=Z+9
230 IF CX>6 THEN Z=Z+8
240 IF CX>7 THEN Z=Z+10
250 IF CX>8 THEN Z=Z+11
260 FOR L=1 TO Z:READ Z$:NEXT L
270 READ Z$
280 IF Z$=''*'' THEN 360
290 IF Z$=''+'' THEN PRINT ''[rvs-on][sp][rv
    s-off]'';:T=T+1:GOTO 270
300 IF Z$='''' THEN PRINT ''[sp]'';:T=T+1:GO
    TO 320
310 PRINT Z$;:T=T+1
320 IF T=120 THEN 430
330 IF T=80 THEN 410
340 IF T=40 THEN 390
350 GOTO 270
360 IF T>80 THEN T=120:PRINT CHR$(13);:GOTO
    430
370 IF T>40 THEN T=80:PRINT CHR$(13);:GOTO 4
    10
380 T=40:PRINT CHR$(13);
390 RESTORE:FOR L=1 TO 102:READ Z$:NEXT:IF Z
    =0 THEN 270
400 GOTO 260
410 RESTORE:FOR L=1 TO 204:READ Z$:NEXT:IF Z
    =0 THEN 270
420 GOTO 260

430 PRINT ''[rvs-on][sp, 40 times][rvs-off]''
    ;
440 RESTORE:T=0
450 IF CX=1 THEN Z(1)=9:Z(2)=20:Z(3)=30:Z(4)
    =Z(3)
```

led by lines 1510-1730. Lines 1740-2450 contain the input routines for the IRA data. The balance for each entry is calculated in lines 2460-2495, and the Save File routine is in lines 5000-5030. Variables that have no entry are masked by the routine in lines 7000-8000. Lines 9000-9050 load existing files from disk, and a file is printed on a printer by the routine contained in lines 10000-10999. Finally, the screen data is located in lines 11001-11008.



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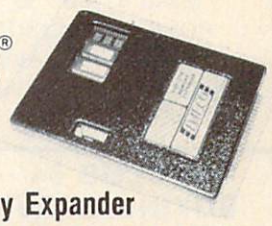

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```
460 IF CX=2 THEN Z(1)=11:Z(2)=21:Z(3)=Z(2):Z
    (4)=Z(3)
470 IF CX=3 THEN Z(1)=10:Z(2)=31:Z(3)=Z(2):Z
    (4)=Z(3)
480 IF CX=4 THEN Z(1)=21:Z(2)=30:Z(3)=38:Z(4
    )=Z(3)
490 IF CX=5 THEN Z(1)=9:Z(2)=17:Z(3)=27:Z(4)
    =38
500 IF CX=6 THEN Z(1)=8:Z(2)=18:Z(3)=29:Z(4)
    =Z(3)
510 IF CX=7 THEN Z(1)=10:Z(2)=21:Z(3)=32:Z(4
    )=Z(3)
520 IF CX=8 THEN Z(1)=11:Z(2)=22:Z(3)=Z(2):Z
    (4)=Z(3)
530 IF CX=9 THEN Z(1)=11:Z(2)=Z(1):Z(3)=Z(2)
    :Z(4)=Z(3)
540 L=1344
550 POKE L,160:POKE L+Z(1),160:POKE L+Z(2),1
    60:POKE L+Z(3),160:POKE L+Z(4),160
560 POKE L+54272,12:POKE L+54272+Z(1),12:POK
    E L+54272+Z(2),12
570 POKE L+54272+Z(3),12:POKE L+54272+Z(4),1
    2
580 L=L+40:IF L=1704 THEN 600
590 GOTO 550
600 PRINT ''[down, 4 times][rvs-on][sp, 40 t
    imes][rvs-off]'';
610 PRINT ''[down, 4 times][rvs-on][sp, 40 t
    imes][rvs-off]'';
620 FOR AA=0 TO 1
630 IF CX<>1 THEN 740
640 PRINT ''[up, 10 times]'';
650 PRINT ''[right]''D$(1,CY)''[right]'';:FO
    R LL=0 TO 30 STEP 10:FOR L=1 TO 10
660 PRINT MID$(D$(2,CY),LL+L,1);:NEXT:PRINT
    ''[down][left, 10 times]'';:NEXT
670 PRINT ''[right, 11 times][up, 4 times]''
    ;
680 FOR LL=0 TO 26 STEP 9:FOR L=1 TO 9:PRINT
     MID$(D$(3,CY),LL+L,1);:NEXT
690 PRINT ''[down][left, 9 times]'';:NEXT:PR
    INT ''[right, 10 times][up, 3 times]'';:
    FOR LL=0 TO 60 STEP 20
700 FOR L=1 TO 9
710 PRINT MID$(D$(4,CY),LL+L,1);:NEXT:PRINT
    ''[down][left, 9 times]'';:NEXT:PRINT
720 IF AA>0 THEN 1370
730 PRINT ''[down, 10 times]'';
740 IF CX<>2 THEN 850

750 PRINT ''[up, 10 times]'';
760 PRINT ''[right]'';:FOR LL=0 TO 30 STEP 1
    0:FOR L=1 TO 10
770 PRINT MID$(D$(2,CY),LL+L,1);:NEXT:PRINT
    ''[down][left, 10 times]'';:NEXT
780 PRINT ''[right, 11 times][up, 4 times]''
    ;
790 FOR LL=0 TO 26 STEP 9:FOR L=1 TO 9:PRINT
     MID$(D$(3,CY),LL+L,1);:NEXT
```

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```
800 PRINT ''[down][left, 9 times]'';:NEXT:PR
    INT ''[right, 10 times][up, 3 times]'';:
    FOR LL=0 TO 60 STEP 20
810 FOR L=1 TO 18
820 PRINT MID$(D$(4,CY),LL+L,1);:NEXT:PRINT
    ''[down][left, 18 times]'';:NEXT:PRINT
830 IF AA>0 THEN 1370
840 PRINT ''[down, 10 times]'';
850 IF CX<>3 THEN 940
860 PRINT ''[up, 10 times]'';:PRINT ''[right
    ]'';:FOR LL=0 TO 26 STEP 9
870 FOR L=1 TO 9:PRINT MID$(D$(3,CY),LL+L,1)
    ;:NEXT:PRINT ''[down][left, 9 times]'';:
    NEXT
880 PRINT ''[right, 10 times][up, 3 times]''
    ;
890 FOR LL=0 TO 60 STEP 20:FOR L=1 TO 20:PRI
    NT MID$(D$(4,CY),LL+L,1);:NEXT
900 PRINT ''[down][left, 20 times]'';:NEXT:P
    RINT ''[right, 21 times][up, 4 times]'';
910 PRINT ''[sp, 2 times]''D$(5,CY);:PRINT ''
    [down, 4 times]'';
920 IF AA>0 THEN 1370
930 PRINT ''[down, 10 times]'';
940 IF CX<>4 THEN 1030
950 PRINT ''[up, 10 times]'';:PRINT ''[right
    ]'';:FOR LL=0 TO 60 STEP 20
960 FOR L=1 TO 20:PRINT MID$(D$(4,CY),LL+L,1
    );:NEXT
```

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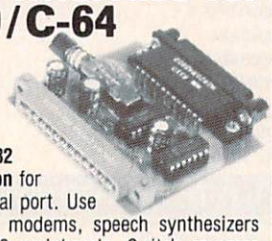

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```
 970 PRINT ''[down][left, 20 times]'';:NEXT:P
     RINT ''[right, 21 times][up, 4 times]'';
 980 PRINT ''[sp, 2 times]''D$(5,CY);
 990 PRINT ''[right]''D$(6,CY)''[right]''MID$
     (D$(7,CY),1,1)
1000 PRINT ''[down, 3 times]'';
1010 IF AA>0 THEN 1370
1020 PRINT ''[down, 10 times]'';
1030 IF CX<>5 THEN 1100
1040 PRINT ''[up, 10 times]'';:PRINT ''[right
     ]'';
1050 PRINT ''[sp, 2 times]''D$(5,CY)''[right]
     ''D$(6,CY)''[right]''D$(7,CY)''[right]''
     ;:FOR LL=0 TO 30 STEP 10
1060 FOR L=1 TO 10:PRINT MID$(D$(8,CY),LL+L,1
     );:NEXT:PRINT ''[down][left, 10 times]''
     ;:NEXT
1070 PRINT ''[right, 11 times][up, 4 times]''
     ;:PRINT MID$(D$(9,CY),1,1);:PRINT ''[dow
     n, 4 times]'';
1080 IF AA>0 THEN 1370
1090 PRINT ''[down, 10 times]'';
1100 IF CX<>6 THEN 1170
1110 PRINT ''[up, 10 times]'';:PRINT ''[right
     ]'';
1120 PRINT D$(6,CY)''[right]''D$(7,CY)''[righ
     t]'';:FOR LL=0 TO 30 STEP 10
1130 FOR L=1 TO 10:PRINT MID$(D$(8,CY),LL+L,1
     );:NEXT:PRINT ''[down][left, 10 times]''
     ;:NEXT
1140 PRINT ''[right, 11 times][up, 4 times]''
     ;:PRINT D$(9,CY);:PRINT ''[down, 4 times
     ]'';
1150 IF AA>0 THEN 1370
1160 PRINT ''[down, 10 times]'';
1170 IF CX<>7 THEN 1240
1180 PRINT ''[up, 10 times]'';:PRINT ''[right
     ]'';
1190 PRINT D$(7,CY)''[right]'';:FOR LL=0 TO 3
     0 STEP 10:FOR L=1 TO 10
1200 PRINT MID$(D$(8,CY),LL+L,1);:NEXT:PRINT
     ''[down][left, 10 times]'';:NEXT
1210 PRINT ''[right, 11 times][up, 4 times]''
     ;:PRINT D$(9,CY);:PRINT ''[down, 4 times
     ][right, 8 times]'';
1220 IF AA>0 THEN 1370
1230 PRINT ''[down, 10 times]'';
1240 IF CX<>8 THEN 1310
1250 PRINT ''[up, 10 times]'';:PRINT ''[right
     ]'';
1260 FOR LL=0 TO 30 STEP 10:FOR L=1 TO 10:PRI
     NT MID$(D$(8,CY),LL+L,1);:NEXT
1270 PRINT ''[down][left, 10 times]'';:NEXT:P
     RINT ''[right, 11 times][up, 4 times]'';
     :PRINT D$(9,CY);
1280 PRINT ''[down, 4 times][right, 18 times]
     '';
1290 IF AA>0 THEN 1370
1300 PRINT ''[down, 10 times]'';
```

```
1310 IF CX<>9 THEN 1370
1320 PRINT ''[up, 10 times]'';:PRINT ''[right
     ]'';
1330 PRINT D$(9,CY);
1340 PRINT ''[down, 5 times][left, 11 times]''
     ;
1350 IF AA>0 THEN 1370
1360 PRINT ''[down, 10 times]'';
1370 CY=CY+1:NEXT:CY=CY-2
1380 IF CX=1 THEN Z=7
1390 IF CX=2 THEN Z=9
1400 IF CX=3 THEN Z=8
1410 IF CX=4 THEN Z=19
1420 IF CX=5 THEN Z=7
1430 IF CX=6 THEN Z=6
1440 IF CX=7 THEN Z=8
1450 IF CX=8 THEN Z=9
1460 IF CX=9 THEN Z=9
1470 FOR L=1345 TO 1345+Z:POKE L,PEEK(L)+128:
     POKE L+54272,11:NEXT
1480 FOR L=1385 TO 1385+Z:POKE L,PEEK(L)+128:
     POKE L+54272,11:NEXT
1490 FOR L=1425 TO 1425+Z:POKE L,PEEK(L)+128:
     POKE L+54272,11:NEXT
1500 FOR L=1465 TO 1465+Z:POKE L,PEEK(L)+128:
     POKE L+54272,11:NEXT
1510 GET NN$
1520 IF NN$=CHR$(133) THEN 1620
1530 IF NN$=CHR$(134) THEN 1640
1540 IF NN$=CHR$(135) THEN 1660
1550 IF NN$=CHR$(136) THEN 1680
1560 IF NN$=CHR$(137) THEN 1700
1570 IF NN$=CHR$(138) THEN 1710
1580 IF NN$=CHR$(139) THEN 1720
1590 IF NN$=CHR$(140) THEN 1730
1595 IF NN$=''S'' THEN 5000
1596 IF NN$=''L'' THEN 9000
1598 IF NN$=''P'' THEN 10000
1600 IF NN$=CHR$(13) THEN 1740
1610 GOTO 1510
1620 CX=CX+1:IF CX=10 THEN CX=9
1630 GOTO 170
1640 CX=CX-1:IF CX=0 THEN CX=1
1650 GOTO 170
1660 CY=CY-1:IF CY=0 THEN CY=1
1670 GOTO 170
1680 CY=CY+1:IF CY=256 THEN CY=255
1685 IF CY>LY THEN LY=LY+1:GOSUB 7000
1690 GOTO 170
1700 CX=9:GOTO 170
1710 CX=1:GOTO 170
1720 CY=1:GOTO 170
1730 CY=LY:GOTO 170
1740 GOSUB 20:D$(CX,CY)=''''
1750 IF CX<>1 THEN 1830
1760 PRINT ''DATE:[sp]**-**-**[left, 8 times]
     '';
1770 GET NN$:IF NN$='''' THEN 1770
1780 IF ASC(NN$)<48 OR ASC(NN$)>57 THEN 1770
```


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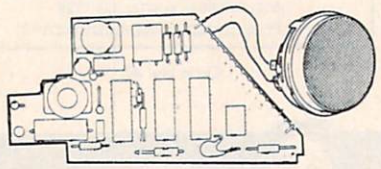

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```
1790 D$(CX,CY)=D$(CX,CY)+NN$:PRINT NN$;:IF LE
     N(D$(CX,CY))=8 THEN 170
1800 IF LEN(D$(CX,CY))=2 OR LEN(D$(CX,CY))=5
     THEN 1820
1810 GOTO 1770
1820 D$(CX,CY)=D$(CX,CY)+""-"":PRINT ""-"";:G
     OTO 1770
1830 IF CX<>2 THEN 1950
1840 PRINT ""FUND[sp]NAME:[sp]*[left]"";
1850 FOR Z=1 TO 40
1860 GET NN$:IF NN$="" THEN 1860
1870 IF NN$=CHR$(13) THEN 1910
1880 IF NN$=CHR$(20) THEN 1930
1890 D$(CX,CY)=D$(CX,CY)+NN$:PRINT NN$""*[lef
     t]"";
1900 NEXT
1910 FOR ZZ=Z TO 40:D$(CX,CY)=D$(CX,CY)+""[sp
     ]"":NEXT
1920 GOTO 170
1930 D$(CX,CY)=LEFT$(D$(CX,CY),LEN(D$(CX,CY))
     -1):NN$="":PRINT ""[left]*[left]"";
1940 Z=Z-1:GOTO 1860
1950 IF CX<>3 THEN 2070
1960 PRINT ""ACCOUNT[sp]#:[sp]*[left]"";
1970 FOR Z=1 TO 36
1980 GET NN$:IF NN$="" THEN 1980
1990 IF NN$=CHR$(13) THEN 2030
2000 IF NN$=CHR$(20) THEN 2050
2010 D$(CX,CY)=D$(CX,CY)+NN$:PRINT NN$""*[lef
     t]"";
2020 NEXT
2030 FOR ZZ=Z TO 36:D$(CX,CY)=D$(CX,CY)+""[sp
     ]"":NEXT
2040 GOTO 170
2050 D$(CX,CY)=LEFT$(D$(CX,CY),LEN(D$(CX,CY))
     -1):NN$="":PRINT ""[left]*[left]"";
2060 Z=Z-1:GOTO 1980
2070 IF CX<>4 THEN 2220
2080 PRINT ""CUSTODIAN[sp]NAME:[sp]*[left]"";
     :GOSUB 2130
2090 PRINT ""ADDRESS:[sp, 8 times]*[left]"";:
     GOSUB 2130
2100 PRINT ""CITY/STATE/ZIP:[sp]*[left]"";:GO
     SUB 2130
2110 PRINT ""CONTACT[sp]PERSON:[sp]*[left]"";
     :GOSUB 2130
2120 GOTO 170
2130 FOR Z=1 TO 20
2140 GET NN$:IF NN$="" THEN 2140
2150 IF NN$=CHR$(20) THEN 2200
2160 IF NN$=CHR$(13) THEN 2180
2170 D$(CX,CY)=D$(CX,CY)+NN$:PRINT NN$""*[lef
     t]"";:NEXT:PRINT:RETURN
2180 FOR ZZ=Z TO 20
2190 D$(CX,CY)=D$(CX,CY)+""[sp]"":NEXT:PRINT:
     RETURN
2200 D$(CX,CY)=LEFT$(D$(CX,CY),LEN(D$(CX,CY))
     -1):NN$="":PRINT ""[left]*[left]"";
2210 Z=Z-1:GOTO 2140
2220 IF CX<>5 THEN 2300
```

```
2240 PRINT ''IRA[sp]FOR[sp]TAX[sp]YEAR:[sp]**
     **[left, 4 times]'';
2250 GET NN$:IF NN$='''' THEN 2250
2260 IF ASC(NN$)<48 OR ASC(NN$)>57 THEN 2250
2270 D$(CX,CY)=D$(CX,CY)+NN$:PRINT NN$;:IF LE
     N(D$(CX,CY))=4 THEN 2290
2280 GOTO 2250
2290 D$(CX,CY)=D$(CX,CY)+''[sp, 2 times]'':GO
     TO 170
2300 IF CX<>6 THEN 2370
2310 PRINT ''ANNUAL[sp]AMOUNT:[sp]****.**[lef
     t, 7 times]'';
2320 GET NN$:IF NN$='''' THEN 2320
2330 IF ASC(NN$)<48 OR ASC(NN$)>57 THEN 2320
2340 D$(CX,CY)=D$(CX,CY)+NN$:PRINT NN$;:IF LE
     N(D$(CX,CY))=7 THEN 170
2350 IF LEN(D$(CX,CY))<>4 THEN 2320
2360 D$(CX,CY)=D$(CX,CY)+''.'':PRINT ''.'';:G
     OTO 2320
2370 IF CX<>7 THEN 2440
2380 PRINT ''ROLL-OVER[sp]AMOUNT:[sp]******.*
     *[left, 9 times]'';
2390 GET NN$:IF NN$='''' THEN 2390
2400 IF ASC(NN$)<48 OR ASC(NN$)>57 THEN 2390
2410 D$(CX,CY)=D$(CX,CY)+NN$:PRINT NN$;:IF LE
     N(D$(CX,CY))=9 THEN 170
2420 IF LEN(D$(CX,CY))<>6 THEN 2390
2430 D$(CX,CY)=D$(CX,CY)+''.'':PRINT ''.'';:G
     OTO 2390
2440 IF CX<>8 THEN 170
2450 GOTO 1840
2460 FOR Q=1 TO LY:D=0:FOR QQ=1 TO Q:D=VAL(D$
     (6,QQ))+D:NEXT:D$(9,Q)=STR$(D)
2470 IF LEFT$(RIGHT$(D$(9,Q),3),1)=''.'' THEN
      2490
2475 IF LEFT$(RIGHT$(D$(9,Q),2),1)=''.'' THEN
     D$(9,Q)=D$(9,Q)+''0'':GOTO 2490
2480 D$(9,Q)=D$(9,Q)+''.00''
2490 IF LEN(D$(9,Q))<>10 THEN D$(9,Q)=''[sp]''
     +D$(9,Q):GOTO 2490
2495 NEXT:RETURN
5000 OPEN 5,8,5,''@0:''+N$+'',S,W''
5010 PRINT#5,LY:FOR AA=1 TO LY:FOR AB=1 TO 9
5020 PRINT#5,D$(AB,AA):NEXT:NEXT
5030 CLOSE 5:GOTO 170
7000 LX=1:IF D$(LX,CY)='''' THEN ZZ=8:GOSUB 8
     000
7010 LX=2:IF D$(LX,CY)='''' THEN ZZ=40:GOSUB
     8000
7020 LX=3:IF D$(LX,CY)='''' THEN ZZ=36:GOSUB
     8000
7030 LX=4:IF D$(LX,CY)='''' THEN ZZ=80:GOSUB
     8000
7040 LX=5:IF D$(LX,CY)='''' THEN ZZ=4:GOSUB 8
     000:D$(LX,CY)=D$(LX,CY)+''[sp, 2 times]''
7050 LX=6:IF D$(LX,CY)='''' THEN ZZ=7:GOSUB 8
     000
7060 LX=7:IF D$(LX,CY)='''' THEN ZZ=9:GOSUB 8
     000
```


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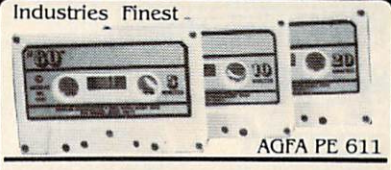

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```
 7070 LX=8:IF D$(LX,CY)="""" THEN ZZ=40:GOSUB
      8000
 7080 LX=9:IF D$(LX,CY)="""" THEN ZZ=10:GOSUB
      8000
 7090 RETURN
 8000 FOR Z=1 TO ZZ:D$(LX,LY)=D$(LX,LY)+""/"":
      NEXT:RETURN
 9000 FOR AA=1 TO LY:FOR AB=1 TO 9:D$(AB,AA)=""
      "":NEXT:NEXT
 9010 OPEN 5,8,5,""0:""+N$+"",S,R""
 9020 INPUT#5,LY:FOR AA=1 TO LY:FOR AB=1 TO 9
 9030 INPUT#5,D$(AB,AA):NEXT
 9040 GOSUB 7000:NEXT
 9050 CLOSE 5:GOTO 170
10000 GOSUB 20:PRINT ""ENTER[sp]TODAY'S[sp]DAT
      E:[sp]**-**-**[left, 8 times]"";:TD$=""""
10010 GET NN$:IF NN$="""" THEN 10010
10020 IF ASC(NN$)<48 OR ASC(NN$)>57 THEN 10010
10030 TD$=TD$+NN$:PRINT NN$;:NN$="""":IF LEN(T
      D$)=8 THEN 10060
10040 IF LEN(TD$)=2 OR LEN(TD$)=5 THEN TD$=TD$
      +""-"":PRINT ""-"";:GOTO 10010
10050 GOTO 10010
10060 PRINT:PRINT ""PRESS[sp]<RETURN>[sp]WHEN[
      sp]PRINTER[sp]IS[sp]READY,"":PRINT ""<HO
      ME>[sp]TO[sp]ABORT
10070 GET NN$:IF NN$=""[clr]"" THEN 170
10080 IF NN$<>CHR$(13) THEN 10070
10090 OPEN 4,4,7
10100 PRINT#4,N$
10110 PRINT#4,""[shf-I]NDIVIDUAL[sp][shf-R]ETI
      REMENT[sp][shf-A]CCOUNT[sp][shf-R]ECORD""
10120 PRINT#4,TD$
10130 PRINT#4,CHR$(13):FOR Q=1 TO 80:PRINT#4,""
      -"";:NEXT:PRINT#4,""""
10140 FOR CY=1 TO LY
10150 PRINT#4,""[sp, 8 times]/[sp, 9 times]/[s
      p, 8 times]/[sp, 3 times][shf-I][shf-R][
      shf-A][sp, 4 times]/[sp, 8 times]/[shf-S
      ]OURCE[sp]OF/"";
10160 PRINT#4,""[sp, 9 times]/""
10170 PRINT#4,""[sp, 8 times]/[sp][shf-A]CCOUN
      T[sp]/[shf-I][shf-R][shf-A][sp][shf-F]OR
      [sp]/[shf-I]NVESTMENT/[sp][shf-A]NNUAL[s
      p]/[shf-R]OLL-OVER/"";
10180 PRINT#4,""[shf-R]OLL-OVER/""
10190 PRINT#4,""[sp, 2 times][shf-D]ATE[sp, 2
      times]/[sp][shf-N]UMBER[sp, 2 times]/[sh
      f-T]AX[sp][shf-Y]EAR/[sp, 3 times][shf-F
      ]UND[sp, 3 times]/[sp][shf-A]MOUNT[sp]/[
      sp, 2 times][shf-F]UNDS[sp, 2 times]/"";
10200 PRINT#4,""[sp][shf-A]MOUNT[sp, 2 times]/
      [sp][shf-B]ALANCE""
10210 PRINT#4,CHR$(13):FOR Q=1 TO 80:PRINT#4,""
      -"";:NEXT:PRINT#4,""""
10220 PRINT#4,D$(1,CY)""/""LEFT$(D$(3,CY),9)""
      /[sp, 2 times]""D$(5,CY)""/"";
10230 PRINT#4,LEFT$(D$(2,CY),10)""/[sp]""D$(6,
      CY)""/""LEFT$(D$(8,CY),9)""/""D$(7,CY);
```

```
10240 PRINT#4,""D$(9,CY)
10250 PRINT#4,""[sp, 8 times]/""MID$(D$(3,CY),
      10,9)""/[sp, 8 times]/"";
10260 PRINT#4,MID$(D$(2,CY),11,10)""/[sp, 8 ti
      mes]/""MID$(D$(8,CY),10,9)""/[sp, 9 time
      s]/""
10270 PRINT#4,""[sp, 8 times]/""MID$(D$(3,CY),
      19,9)""/[sp, 8 times]/"";
10280 PRINT#4,MID$(D$(2,CY),21,10)""/[sp, 8 ti
      mes]/""MID$(D$(8,CY),19,9)""/[sp, 9 time
      s]/""
10290 PRINT#4,""[sp, 8 times]/[sp, 9 times]/[s
      p, 8 times]/"";
10300 PRINT#4,MID$(D$(2,CY),31,10)""/[sp, 8 ti
      mes]/""MID$(D$(8,CY),28,9)""/[sp, 9 time
      s]/""
10310 PRINT#4,CHR$(13):FOR Q=1 TO 80:PRINT#4,""
      -"";:NEXT:PRINT#4,""""
10320 PRINT#4,""[shf-C]USTODIAN[sp][shf-A]DDRE
      SS[sp]&[sp]/"":PRINT#4,""[sp, 3 times][s
      hf-C]ONTACT[sp][shf-P]ERSON[sp, 3 times]
      /""
10330 PRINT#4,CHR$(13):FOR Q=1 TO 80:PRINT#4,""
      -"";:NEXT:PRINT#4,""""
10340 PRINT#4,MID$(D$(4,CY),1,20)""/"":PRINT#4
      ,MID$(D$(4,CY),21,20)""/""
10350 PRINT#4,MID$(D$(4,CY),41,20)""/"":PRINT#
      4,MID$(D$(4,CY),61,20)""/""
10360 PRINT#4,CHR$(13):FOR Q=1 TO 80:PRINT#4,""
      -"";:NEXT:PRINT#4,""""
10370 PRINT#4,CHR$(13):FOR Q=1 TO 80:PRINT#4,""
      -"";:NEXT:PRINT#4,""""
10380 NEXT:CY=LY
10999 CLOSE 4,4,7:GOTO 170
11001 DATA +,,,,,,,,,+,,,,I,R,A,,,,,+,,,,,,,,,
      ,+,,,,,,,,,,,,,,,,,,,,,+
11002 DATA ,,,,,,,,+,,,,,,,,+,,,,,,,,,+,S,O,U
      ,R,C,E,,O,F,,+,,,,,,,,,,,+,*
11003 DATA +,,,,,,,,,+,I,N,V,E,S,T,M,E,N,T,+,,
      A,C,C,O,U,N,T,,+
11004 DATA C,U,S,T,O,D,I,A,N,,A,D,D,R,E,S,S,,&
      ,,+,I,R,A,,F,O,R,,+,A,N,N,U,A,L,,+
11005 DATA R,O,L,L,-,O,V,E,R,+,R,O,L,L,-,O,V,E
      ,R,,+,,,,,,,,,,,,+,*
11006 DATA +,,,D,A,T,E,,,+,,,,F,U,N,D,,,,+,,N,
      U,M,B,E,R,,,+,,,,C,O,N,T,A,C,T
11007 DATA ,P,E,R,S,O,N,,,,+,T,A,X,,Y,E,A,R,+,
      A,M,O,U,N,T,,+,,A,M,O,U,N,T,,,+
11008 DATA ,,F,U,N,D,S,,,,+,,B,A,L,A,N,C,E,,,+
      ,*
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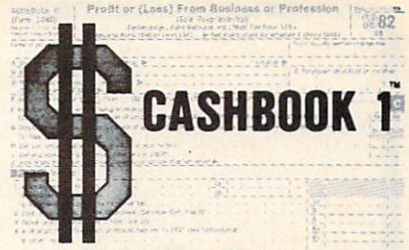

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Address Book

by Roger Christensen

Here is a BASIC program to create a listing for names, addresses, and phone numbers. The program is ideal for the beginner to see the basic functions that can be used in much more complicated programming.

For programmers with intermediate skills, the file might be enhanced with additional information to suit a particular need. The possibilities include account numbers and billing information for a small, home based business.

PROGRAM FEATURES

1. ADD—To add addresses, allows for corrections to fields after all entries are made.
2. Delete—Deletes an address.
3. Print—Allows printing to screen or printer.
4. End—To Exit program you must verify by answering yes or no.

The program uses the GET statement for getting information and shows one way of using GET with a blinking curser through basic. All saving and loading is done under program control, when the program is first run it will search the disk for data and if there is none, it will GOTO the main screen and wait for user input, if there is data it will load it into memory. Prior to leaving the program the information will be saved to the disk and then there will be a system reset.

The program is set up to go to any CBM printer.

```
100 REM ************************
    ********
110 REM **
            **
120 REM ** ADDRESS INFORMATION
     BY     **
130 REM **
            **
140 REM ** ROGER CHRISTENSEN .
    .1983   **
150 REM **
            **
160 REM ** COPYRIGHT 12/1/83
            **
170 REM ************************
    *********
180 MEM=200:LW=1
190 DIMQ(MEM),A$(MEM,6),CT(MEM
    ),CY(6)
200 GOTO400
210 FORJ=1TO2500:NEXT
220 RETURN
230 POKE53265,PEEK(53265)AND23
    9
240 FORJ=1TO10:NEXT
250 RETURN
260 POKE53265,PEEK(53265)OR16
270 FORJ=1TO10:NEXT
280 RETURN
290 S1=54272
300 FORL=0TO24:POKES1+L,0:NEXT
310 POKE2+14,5:POKES1+18,16:PO
    KES1+3,1:POKES1+24,143
320 POKES1+6,240:POKES1+4,65:F
    R=5389
330 FORT=1TO5
340 FQ=FR+PEEK(S+27)*3.5
350 HF=INT(FQ/256):LF=FQ-HF*25
    6
360 POKES1+0,LF:POKES1+1,HF
370 NEXT
380 POKES1+24,0
390 RETURN
400 P$=''[home][down, 26 times
    ]'':T4=28:GOSUB230
410 POKE53280,7:POKE53281,1:T1
    =3:T2=10:T3=13
420 PRINT''[clr][rvs-on][com-4
    ][sp, 7 times][rvs-on][blu
    ][shf-U][shf-C, 24 times][
    shf-I][rvs-off][rvs-on][co
    m-4][sp, 6 times]'';
430 PRINT''[rvs-on][com-4][sp,
     8 times][rvs-on][shf-B][w
    ht][sp, 24 times][wht][blu
    ][snf-B][rvs-on][com-4][sp
    , 6 times]'';
440 PRINT''[rvs-on][com-4][sp,
     8 times][rvs-on][shf-J][s
    hf-C, 24 times][shf-K][rvs
    -on][com-4][sp, 7 times]''
```

```
450 PRINT''[home][down]'';SPC(
    11);''[red][sp, 2 times]AD
    DRESS[sp]KEEPER[sp, 2 time
    s][blk]''
460 REM PRINT''[down][rvs-on][
    com-7][sp, 39 times]'';
470 PRINT''[down][rvs-on][com-
    7][sp, 2 times][rvs-on][sh
    f-U][shf-C, 4 times][shf-I
    ][rvs-on][com-7][sp, 2 tim
    es][rvs-on][shf-U][shf-C,
    25 times][shf-I][rvs-on][s
    p, 3 times]'';
480 PRINT''[rvs-on][com-7][rvs
    -on][blk]1[rvs-off][rvs-on
    ][com-7][sp][rvs-on][shf-B
    ][rvs-off][wht][sp, 4 time
    s][rvs-on][com-7][shf-B][r
    vs-on][com-7][sp, 2 times]
    [rvs-on][shf-B][rvs-off][
    wht][sp, 25 times][rvs-on]
    [com-7][shf-B][rvs-on][sp
    , 2 times]'';
490 PRINT''[rvs-on][com-7][sp,
     3 times][rvs-on][shf-J][s
    hf-C, 4 times][shf-K][rvs-
    on][com-7][sp, 2 times][rv
    s-on][shf-J][shf-C, 25 tim
    es][shf-K][rvs-on][com-7][
    sp, 3 times]'';
500 PRINT''[rvs-on][com-7][sp,
     2 times][rvs-on][shf-U][s
    hf-C, 7 times][shf-I][rvs-
    on][com-7][sp, 2 times][rv
    s-on][shf-U][shf-C, 16 tim
    es][shf-I][rvs-on][sp, 9 t
    imes]'';
510 PRINT''[rvs-on][com-7][rvs
    -on][blk]2[rvs-off][rvs-on
    ][com-7][sp][rvs-on][shf-B
    ][wht][sp, 7 times][com-7]
    [shf-B][rvs-on][com-7][sp
    , 2 times][rvs-on][shf-B][
    wht][sp, 16 times][com-7][
    shf-B][rvs-on][sp, 8 times
    ]'';
520 PRINT''[rvs-on][com-7][sp,
     3 times][rvs-on][shf-J][s
    hf-C, 7 times][shf-K][rvs-
    on][com-7][sp, 2 times][rv
    s-on][shf-J][shf-C, 16 tim
    es][shf-K][rvs-on][sp, 9 t
    imes]'';
530 PRINT''[rvs-on][com-7][sp,
     2 times][rvs-on][shf-U][s
    hf-C, 4 times][shf-I][rvs-
    on][com-7][sp, 5 times][rv
    s-on][shf-U][shf-C, 10 tim
    es][shf-I][rvs-on][sp, 15
    times]'';
540 PRINT''[rvs-on][com-7][rvs
    -on][blk]3[rvs-off][rvs-on
    ][com-7][sp][rvs-on][shf-B
    ][wht][sp, 4 times][com-7]
    [shf-B][rvs-on][com-7][sp
    , 5 times][rvs-on][shf-B][
    wht][sp, 10 times][com-7][
    shf-B][rvs-on][sp, 14 time
    s]'';
550 PRINT''[rvs-on][com-7][sp,
     3 times][rvs-on][shf-J][s
    hf-C, 4 times][shf-K][rvs-
    on][com-7][sp, 5 times][rv
    s-on][shf-J][shf-C, 10 tim
    es][shf-K][rvs-on][sp, 15
    times]'';
```

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```
560 PRINT''[rvs-on][com-7][sp,
     2 times][rvs-on][shf-U][s
    hf-C, 5 times][shf-I][rvs-
    on][com-7][sp, 4 times][rv
    s-on][shf-U][shf-C, 2 time
    s][shf-I][rvs-on][sp, 4 ti
    mes][rvs-on][shf-U][shf-C,
     3 times][shf-I][rvs-on][s
    p, 2 times][rvs-on][shf-U]
    [shf-C, 5 times][shf-I][r
    vs-on][sp, 5 times]'';
570 PRINT''[rvs-on][com-7][rvs
    -on][blk]4[rvs-off][rvs-on
    ][com-7][sp][rvs-on][shf-B
    ][wht][sp, 5 times][com-7]
    [shf-B][rvs-on][com-7][sp
    , 4 times][rvs-on][shf-B][
    wht][sp, 2 times][com-7][s
    hf-B][rvs-on][sp, 2 times]
    [rvs-on][blk]5[com-7][sp]
    [rvs-on][shf-B][wht][sp,
    3 times][com-7][rvs-on][sh
    f-B][sp, 2 times][shf-B][r
    vs-on][wht][sp, 5 times][r
    vs-on][com-7][shf-B][sp, 4
     times]'';

580 PRINT''[rvs-on][com-7][sp,
     3 times][rvs-on][shf-J][s
    hf-C, 5 times][shf-K][rvs-
    on][com-7][sp, 4 times][rv
    s-on][shf-J][shf-C, 2 time
    s][shf-K][rvs-on][sp, 4 ti
    mes][rvs-on][shf-J][shf-C,
     3 times][shf-K][rvs-on][s
    p, 2 times][rvs-on][shf-J]
    [shf-C, 5 times][shf-K][r
    vs-on][sp, 5 times]'';
590 PRINT''[rvs-on][com-7][sp,
     2 times][rvs-on][shf-U][s
    hf-C, 5 times][shf-I][rvs-
    on][com-7][sp, 4 times][rv
    s-on][shf-U][shf-C, 12 tim
    es][shf-I][rvs-on][sp, 13
    times]'';
600 PRINT''[rvs-on][com-7][rvs
    -on][blk]6[rvs-off][rvs-on
    ][com-7][sp][rvs-on][shf-B
    ][wht][sp, 5 times][com-7]
    [shf-B][rvs-on][com-7][sp
    , 4 times][rvs-on][shf-B][
    wht][sp, 3 times][rvs-on][
    blk]/[wht][sp, 3 times][rv
    s-on][blk]-[wht][sp, 4 tim
    es][com-7][shf-B][rvs-on][
    sp, 12 times]'';

610 PRINT''[rvs-on][com-7][sp,
     3 times][rvs-on][shf-J][s
    hf-C, 5 times][shf-K][rvs-
    on][com-7][sp, 4 times][rv
    s-on][shf-J][shf-C, 12 tim
    es][shf-K][rvs-on][sp, 13
    times]'';
620 PRINT''[rvs-on][com-7][sp,
     45 times]'';
630 PRINT''[rvs-on][com-7][sp,
     53 times]'';
640 PRINT''[rvs-on][com-7][sp,
     22 times][rvs-off]''
650 PRINTLEFT$(P$,5);SPC(T1);''
    [blk]NAME''
660 PRINTLEFT$(P$,8);SPC(T1);''
    ADDRESS''
670 PRINTLEFT$(P$,11);SPC(T1);
    ''CITY''
680 PRINTLEFT$(P$,14);SPC(T1);
    ''STATE'';SPC(T1+11);''ZIP
    ''
690 PRINTLEFT$(P$,17);SPC(T1);
    ''PHONE''
700 PRINT''[down, 4 times]'';S
    PC(1);''[rvs-on][red][sp]A
    [sp][rvs-off][blk][sp]ADD[
    sp][rvs-on][red][sp]D[sp][
    rvs-off][blk][sp]DELETE[sp
    , 2 times][rvs-on][red][sp
    ]P[sp][rvs-off][blk][sp]PR
    INT[sp, 2 times][rvs-on][s
    p]E[sp][rvs-off][sp]END''
710 FORJ=1TO100:NEXT:GOSUB290:
    GOSUB260
720 IFLW=1THENLW=0:GOTO2110
730 O=O+1:PRINTLEFT$(P$,2);SPC
    (11);''[com-4]ENTER[sp]YOU
    R[sp]CHOICE[sp][blk]'':IFO
    =3THENO=0:GOTO770
740 FORJ=1TO500:NEXT:PRINTLEFT
    $(P$,2);SPC(11);''[com-4][
    sp, 18 times][blk]''
750 FORJ=1TO100:NEXT
760 GOTO730
770 GETG$:IFG$=''''THEN770
780 SS$='''':SL$=''''
790 IFG$=''A''THEN840
800 IFG$=''D''THEN2410
810 IFG$=''P''THEN2690
820 IFG$=''E''THEN3120
830 GOTO770
840 Q=Q+1
850 FORJ=1TO100:NEXT:GOSUB290
860 PRINTLEFT$(P$,2);SPC(11);''
    [com-4][sp, 3 times]ENTER[
    sp]NAME[sp, 5 times][blk]''
```

```
870 FORX=1TO25
880 PRINTLEFT$(P$,5);SPC(T2+X)
    ;''[blk][com-+]''
890 FORJ=1TO5:NEXT
900 PRINTLEFT$(P$,5);SPC(T2+X)
    ;''[sp]'';
910 GETG$:IFG$=''''THEN880
920 IFG$=CHR$(13)THENPOKE198,0
    :GOTO960
930 PRINTLEFT$(P$,5);SPC(T2+X)
    ;G$
940 A$(Q,1)=A$(Q,1)+G$
950 NEXT
960 IFLC=1THENLC=0:GOTO1730
970 FORJ=1TO100:NEXT:GOSUB290
980 PRINTLEFT$(P$,2);SPC(11);''
    [com-4][sp, 2 times]ENTER[
    sp]ADDRESS[sp, 3 times][bl
    k]''
990 FORX=1TO16
1000 PRINTLEFT$(P$,8);SPC(T3+X)
    ;''[blk][com-+]''
1010 FORJ=1TO5:NEXT
1020 PRINTLEFT$(P$,8);SPC(T3+X)
    ;''[sp]'';
1030 GETG$:IFG$=''''THEN1000
1040 IFG$=CHR$(13)THENPOKE198,0
    :GOTO1080
```

```
1050 PRINTLEFT$(P$,8);SPC(T3+X)
    ;G$
1060 A$(Q,2)=A$(Q,2)+G$
1070 NEXT
1080 IFLC=1THENLC=0:GOTO1730
1090 FORJ=1TO100:NEXT:GOSUB290
1100 PRINTLEFT$(P$,2);SPC(11);''
    [com-4][sp, 4 times]ENTER[
    sp]CITY[sp, 4 times][blk]''
1110 FORX=1TO10
1120 PRINTLEFT$(P$,11);SPC(T3+X
    );''[blk][com-+]''
1130 FORJ=1TO5:NEXT
1140 PRINTLEFT$(P$,11);SPC(T3+X
    );''[sp]'';
1150 GETG$:IFG$=''''THEN1120
1160 IFG$=CHR$(13)THENPOKE198,0
    :GOTO1200
1170 PRINTLEFT$(P$,11);SPC(T3+X
    );G$
1180 A$(Q,3)=A$(Q,3)+G$
1190 NEXT
1200 IFLC=1THENLC=0:GOTO1730
1210 FORJ=1TO100:NEXT:GOSUB290
1220 PRINTLEFT$(P$,2);SPC(11);''
    [com-4][sp, 2 times]ENTER[
    sp]STATE[sp, 5 times][blk]
    ''
```


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```
1230 FORX=1TO2
1240 PRINTLEFT$(P$,14);SPC(T3+X
     );''[blk][com-+]''
1250 FORJ=1TO5:NEXT
1260 PRINTLEFT$(P$,14);SPC(T3+X
     );''[sp]'';
1270 GETG$:IFG$=''''THEN1240
1280 IFG$=CHR$(13)THENPOKE198,0
     :GOTO1320
1290 PRINTLEFT$(P$,14);SPC(T3+X
     );G$
1300 A$(Q,4)=A$(Q,4)+G$
1310 NEXT
1320 IFLC=1THENLC=0:GOTO1730
1330 FORJ=1TO100:NEXT:GOSUB290
1340 PRINTLEFT$(P$,2);SPC(11);''
     [com-4][sp, 4 times]ENTER[
     sp]ZIP[sp, 5 times][blk]''
1350 FORX=1TO5
1360 PRINTLEFT$(P$,14);SPC(T4+X
     );''[blk][com-+]''
1370 FORJ=1TO5:NEXT
1380 PRINTLEFT$(P$,14);SPC(T4+X
     );''[sp]'';
1390 GETG$:IFG$=''''THEN1360
1400 PRINTLEFT$(P$,14);SPC(T4+X
     );G$
1410 A$(Q,5)=A$(Q,5)+G$
1420 NEXT
1430 IFLC=1THENLC=0:GOTO1730
1440 FORJ=1TO100:NEXT:GOSUB290
1450 PRINTLEFT$(P$,2);SPC(11);''
     [com-4][sp, 4 times]ENTER[
     sp]PHONE[sp, 3 times][blk]
     ''
1460 FORX=1TO3
1470 PRINTLEFT$(P$,17);SPC(T3+X
     );''[blk][com-+]''
1480 FORJ=1TO5:NEXT
1490 PRINTLEFT$(P$,17);SPC(T3+X
     );''[sp]'';
1500 GETG$:IFG$=''''THEN1470
1510 PRINTLEFT$(P$,17);SPC(T3+X
     );G$
1520 C$=C$+G$
1530 NEXT
1540 FORX=1TO3
1550 PRINTLEFT$(P$,17);SPC(T3+4
     +X);''[blk][com-+]''
1560 FORJ=1TO5:NEXT
1570 PRINTLEFT$(P$,17);SPC(T3+4
     +X);''[sp]'';
1580 GETG$:IFG$=''''THEN1550
1590 PRINTLEFT$(P$,17);SPC(T3+4
     +X);G$
1600 C1$=C1$+G$
1610 NEXT
1620 FORX=1TO4
1630 PRINTLEFT$(P$,17);SPC(T3+8
     +X);''[blk][com-+]''
1640 FORJ=1TO5:NEXT
1650 PRINTLEFT$(P$,17);SPC(T3+8
     +X);''[sp]'';
1660 GETG$:IFG$=''''THEN1630
1670 PRINTLEFT$(P$,17);SPC(T3+8
     +X);G$
1680 C2$=C2$+G$
1690 NEXT
1700 A$(Q,6)=C$+''/''+C1$+''-''
     +C2$:C$='''':C1$='''':C2$=
     ''''
1710 IFLC=1THENLC=0:GOTO1730
1720 FORJ=1TO100:NEXT:GOSUB290
1730 FORJ=1TO100:NEXT:X=0:GOSUB
     290
1740 X=X+1:PRINTLEFT$(P$,2);SPC
     (11);''[com-4]ALL[sp]CORRE
     CT[sp]Y/N[sp, 3 times][blk
     ]'':IFX=3THENX=0:GOTO1780
1750 FORJ=1TO500:NEXT:PRINTLEFT
     $(P$,2);SPC(11);''[com-4][
     sp, 18 times][blk]''
1760 FORJ=1TO100:NEXT
1770 GOTO1740
1780 GETG$:IFG$=''''THEN1780
1790 IFG$=''Y''THENGOSUB230:GOT
     O410
1800 IFG$=''N''THEN1820
1810 GOTO1780
1820 FORJ=1TO100:NEXT:X=0:GOSUB
     290
1830 X=X+1:PRINTLEFT$(P$,2);SPC
     (11);''[com-4][sp, 2 times
     ]ENTER[sp]FIELD[sp]#[sp, 3
      times][blk]'':IFX=3THENX=
     0:GOTO1870
1840 FORJ=1TO500:NEXT:PRINTLEFT
     $(P$,2);SPC(11);''[com-4][
     sp, 18 times][blk]''
1850 FORJ=1TO100:NEXT
1860 GOTO1830
1870 GETG$:IFG$=''''THEN1870
1880 ONVAL(G$)GOTO1900,1930,196
     0,1990,2020,2050
1890 GOTO1870
1900 IFVAL(G$)=1THENPRINTLEFT$(
     P$,2);SPC(11);''[com-4][sp
     , 2 times]CORRECT[sp]NAME[
     sp, 4 times][blk]'':A$(Q,1
     )=''''
1910 FORZ=1219TO1195STEP-1:POKE
     Z,32:FORJ=1TO50:NEXT:NEXT
1920 LC=1:GOTO850
```

```
1930 IFVAL(G$)=2THENPRINTLEFT$(
     P$,2);SPC(11);''[com-4][sp
     , 2 times]CORRECT[sp]ADDRE
     SS[sp][blk]'':A$(Q,2)=''''
1940 FORZ=1333TO1318STEP-1:POKE
     Z,32:FORJ=1TO50:NEXT:NEXT
1950 LC=1:GOTO970
1960 IFVAL(G$)=3THENPRINTLEFT$(
     P$,2);SPC(11);''[com-4][sp
     , 2 times]CORRECT[sp]CITY[
     sp, 4 times][blk]'':A$(Q,3
     )=''''
1970 FORZ=1447TO1438STEP-1:POKE
     Z,32:FORJ=1TO50:NEXT:NEXT
1980 LC=1:GOTO1090
1990 IFVAL(G$)=4THENPRINTLEFT$(
     P$,2);SPC(11);''[com-4][sp
     , 2 times]CORRECT[sp]STATE
     [sp, 3 times][blk]'':A$(Q,
     4)=''''
2000 FORZ=1559TO1558STEP-1:POKE
     Z,32:FORJ=1TO50:NEXT:NEXT
2010 LC=1:GOTO1210
2020 IFVAL(G$)=5THENPRINTLEFT$(
     P$,2);SPC(11);''[com-4][sp
     , 2 times]CORRECT[sp]ZIP[s
     p, 5 times][blk]'':A$(Q,5)
     =''''
2030 FORZ=1577TO1573STEP-1:POKE
     Z,32:FORJ=1TO50:NEXT:NEXT
2040 LC=1:GOTO1330
2050 IFVAL(G$)=6THENPRINTLEFT$(
     P$,2);SPC(11);''[com-4][sp
     , 2 times]CORRECT[sp]PHONE
     [sp, 3 times][blk]'':A$(Q,
     6)=''''
2060 FORZ=1680TO1678STEP-1:POKE
     Z,32:FORJ=1TO50:NEXT:NEXT
2070 FORZ=1684TO1682STEP-1:POKE
     Z,32:FORJ=1TO50:NEXT:NEXT
2080 FORZ=1689TO1686STEP-1:POKE
     Z,32:FORJ=1TO50:NEXT:NEXT
2090 LC=1:GOTO1440
2100 GOTO1870
2110 PRINTLEFT$(P$,2);SPC(11);''
     [com-4][sp, 2 times]LOADIN
     G[sp]DATA[sp, 4 times][blk
     ]'':FORJ=1TO1000:NEXT
2120 PRINTLEFT$(P$,2);SPC(11);''
     [com-4]ONE[sp]MINUTE[sp]PL
     EASE[sp][blk]''
2130 OPEN7,8,7,''0:ADDR1,S,R''
2140 OPEN15,8,15:INPUT#15,E$,E1
     $,E2$,E3$
2150 IFVAL(E$)=62THENCLOSE7:CLO
     SE15:GOTO410
2160 SS=0
2170 SS=SS+1
2180 INPUT#7,A$(SS,1)
2190 INPUT#7,A$(SS,2)
2200 INPUT#7,A$(SS,3)
2210 INPUT#7,A$(SS,4)
2220 INPUT#7,A$(SS,5)
2230 INPUT#7,A$(SS,6)
2240 IFST=0GOTO2170
2250 Q=SS
2260 CLOSE7:CLOSE15
2270 GOTO410
2280 PRINTLEFT$(P$,2);SPC(11);''
     [com-4][sp, 2 times]SAVING
     [sp]DATA[sp, 5 times][blk]
     '':FORJ=1TO1000:NEXT
2290 PRINTLEFT$(P$,2);SPC(11);''
     [com-4]ONE[sp]MINUTE[sp]PL
     EASE[sp][blk]''
2300 OPEN6,8,6,''@0:ADDR1,S,W''
2310 FORLS=1TOQ
2320 PRINT#6,A$(LS,1)
2330 PRINT#6,A$(LS,2)
2340 PRINT#6,A$(LS,3)
2350 PRINT#6,A$(LS,4)
2360 PRINT#6,A$(LS,5)
2370 PRINT#6,A$(LS,6)
2380 NEXT
```


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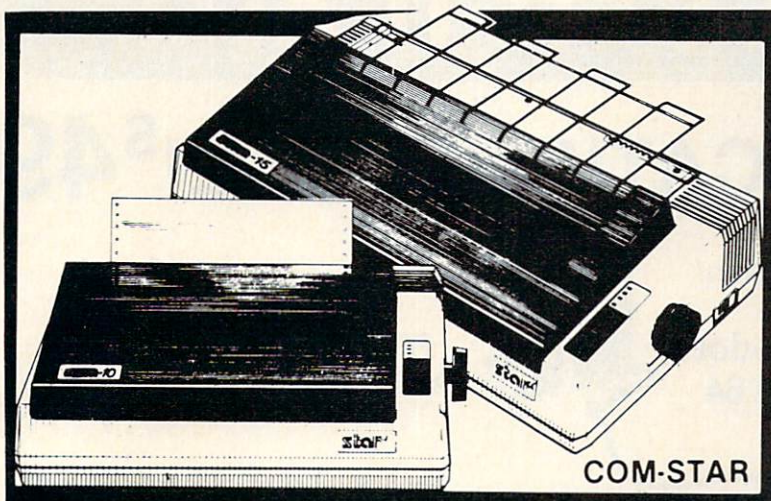

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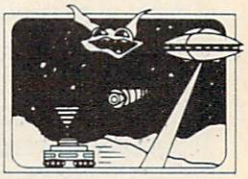
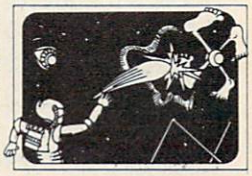


Video Mania — You're in an open field and strange alien creatures are roaming all over. If you stand still too long, they'll collide with you, causing instant annihilation. Your only defense is to destroy them by throwing your electronic, football-shaped alien zapper at them. **Sale $9.95.**



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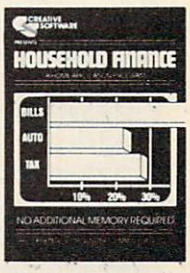

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```
2390 CLOSE6
2400 GOTO3200
2410 PRINTLEFT$(P$,2);SPC(11);''
     [com-4][sp, 2 times]DELETE
     [sp]MODE[sp, 5 times][blk]
     '':FORJ=1TO1000:NEXT
2420 FORJ=1TO100:NEXT:GOSUB290
2430 PRINTLEFT$(P$,2);SPC(11);''
     [com-4][sp, 3 times]ENTER[
     sp]NAME[sp, 5 times][blk]''
2440 FORX=1TO25
2450 PRINTLEFT$(P$,5);SPC(T2+X)
     ;''[blk][com-+]''
2460 FORJ=1TO5:NEXT
2470 PRINTLEFT$(P$,5);SPC(T2+X)
     ;''[sp]'';
2480 GETG$:IFG$=''''THEN2450
2490 IFG$=CHR$(13)THENPOKE198,0
     :GOTO2530
2500 PRINTLEFT$(P$,5);SPC(T2+X)
     ;G$
2510 DL$=DL$+G$
2520 NEXT
2530 FORAS=1TOQ:IFDL$=A$(AS,1)T
     HEN2580
2540 NEXT
2550 PRINTLEFT$(P$,2);SPC(11);''
     [com-4][sp, 2 times]NAME[s
     p]NOT[sp]FOUND[sp, 2 times
     ][blk]'':FORJ=1TO1000:NEXT
2560 DL$=''''
2570 GOTO410
2580 DL$='''':SD=0
2590 Q=Q-1
2600 FORSD=ASTOQ
2610 A$(SD,1)=A$(SD+1,1)
2620 A$(SD,2)=A$(SD+1,2)
2630 A$(SD,3)=A$(SD+1,3)
2640 A$(SD,4)=A$(SD+1,4)
2650 A$(SD,5)=A$(SD+1,5)
2660 A$(SD,6)=A$(SD+1,6)
2670 NEXT
2680 GOTO410
2690 PRINTLEFT$(P$,2);SPC(11);''
     [com-4][rvs-on]S[rvs-off][
     sp]CREEN[sp]OR[sp][rvs-on]
     P[rvs-off][sp]RINTER[sp][
     blk]''
2700 GETG$:IFG$=''''THEN2700
2710 IFG$=''S''THEN2740
2720 IFG$=''P''THEN2940
2730 GOTO2700
2740 FORER=1TOQ
2750 IFA$(ER,1)=''''THEN2920
2760 PRINTLEFT$(P$,5);SPC(T2+1)
     ;A$(ER,1)
2770 PRINTLEFT$(P$,8);SPC(T3+1)
     ;A$(ER,2)
2780 PRINTLEFT$(P$,11);SPC(T3+1
     );A$(ER,3)
2790 PRINTLEFT$(P$,14);SPC(T3+1
     );A$(ER,4)
2800 PRINTLEFT$(P$,14);SPC(T4+1
     );A$(ER,5)
2810 PRINTLEFT$(P$,17);SPC(T3+1
     );A$(ER,6)
2820 PRINTLEFT$(P$,2);SPC(11);''
     [com-4][sp, 3 times]PRESS[
     sp]ANY[sp]KEY[sp, 4 times]
     [blk]''
2830 GETG$:IFG$=''''THEN2830
2840 FORZ=1219TO1195STEP-1:POKE
     Z,32:FORJ=1TO10:NEXT:NEXT
2850 FORZ=1333TO1318STEP-1:POKE
     Z,32:FORJ=1TO10:NEXT:NEXT
2860 FORZ=1447TO1438STEP-1:POKE
     Z,32:FORJ=1TO10:NEXT:NEXT
2870 FORZ=1559TO1558STEP-1:POKE
     Z,32:FORJ=1TO10:NEXT:NEXT
2880 FORZ=1577TO1573STEP-1:POKE
     Z,32:FORJ=1TO10:NEXT:NEXT
2890 FORZ=1680TO1678STEP-1:POKE
     Z,32:FORJ=1TO10:NEXT:NEXT
2900 FORZ=1684TO1682STEP-1:POKE
     Z,32:FORJ=1TO10:NEXT:NEXT
2910 FORZ=1689TO1686STEP-1:POKE
     Z,32:FORJ=1TO10:NEXT:NEXT
2920 NEXT
2930 GOTO410
2940 OPEN4,4:CMD4
2950 PRINT''NAME'';SPC(22)''ADD
     RESS'';SPC(10)''CITY'';SPC
     (8)''ST'';SPC(2)''ZIP'';
2960 PRINTSPC(2);''PHONE''
2970 FORPL=0TO79:PRINT''='';:NE
     XT
2980 FORPR=1TOQ
2990 PL=PL+1
3000 IFA$(PR,1)=''''THEN3070
3010 PRINTA$(PR,1);TAB(26-LEN(A
     $(PR,1)));A$(PR,2);
3020 PRINTTAB(17-LEN(A$(PR,2)))
     ;A$(PR,3);
3030 PRINTTAB(12-LEN(A$(PR,3)))
     ;A$(PR,4);
3040 PRINTTAB(3-LEN(A$(PR,4)));
     A$(PR,5);
3050 PRINTTAB(6-LEN(A$(PR,5)));
     A$(PR,6);
3060 PRINT
3070 NEXT
3080 IFPL=60THENPL=0:FORPD=1TO8
     :PRINT:NEXT
3090 IFPR<60THENPD=60-PR:FORPK=
     1TOPD:PRINT:NEXT:PL=0
3100 PRINT#4:CLOSE4,4
```


Continued on page 95

Partial String Match

by Jerry Sturdivant

This is a useful routine that takes a search word and looks through your strings for a partial match.

As an example: I have the titles of all popular computer magazine articles in my computer (over 800). Although I have mine in sequential files and added DATA for the magazine names, the example will give you the basic idea of the routine.

If I wish to find all articles on a given subject, or find an article title I'm not sure of, the partial string match routine is used to find which issue it's in. If there is an article about a character editor, I use the search word 'EDITOR'. The routine takes the word and, in effect, "slides" it along each article title to see if it finds a match.

A CHARACTER EDITOR FOR THE COMMODORE 64 * 6/83

EDITOR

If it matches, it prints the title on the screen along with the magazines month and year.

Let's look at the routine by looking for articles having to do with BASIC. In line 80 we make WQRD$ = "BASIC" (we can't spell WQRD$ with an 'O' because the BASIC word OR is in there). Line 90 brings us our first article title out of data (line 250) and applies it to ARTICLES$. Line 100 checks to see if we have gone through all the data.

```
 10 GOTO80
 20 ''
 30 ''[sp, 2 times]ARTICLE$[sp]=[sp]ARTICLE[
    sp]TITLE
 40 ''[sp, 2 times]WQRD$[sp, 4 times]=[sp]WO
    RD[sp]BEING[sp]SEARCHED
 50 ''
 60 ''[sp, 6 times]START[sp]SEARCH
 70 ''[sp, 5 times][com-U, 14 times]
 80 INPUT''[down][sp]TYPE[sp]SEARCH[sp]WORD''
    ;WQRD$
 90 READ ARTICLE$
100 IF ARTICLE$=''END'' THEN 150
110 FOR J=1 TO LEN(ARTICLE$)-LEN(WQRD$)-5
120 IF WQRD$=MID$(ARTICLE$,J,LEN(WQRD$))THEN
     GOSUB 200
130 NEXT
140 GOTO 90
150 PRINT''[down][sp]SEARCH[sp]COMPLETE''
160 RESTORE
170 GOTO 80
180 ''[sp, 5 times]SCREEN
190 ''[sp, 4 times][com-U, 8 times]
200 J=LEN(ARTICLE$)-LEN(WQRD$)-5
210 PRINT:PRINT ARTICLE$
220 RETURN
230 ''[sp, 5 times]DATA
240 ''[sp, 4 times][com-U, 6 times]
250 DATA LIVING WITH TOTL.LABEL 2.6 *  6/83
260 DATA ARITHMETIC AT NURSERY SCHOOL *  6/8
    3
270 DATA THE BASICS OF BASIC *  6/83
280 DATA MACHINE LANGUAGE I/O *  6/83
290 DATA PIE GRAPH *  6/83
300 DATA END
```

Line 110 is where the work begins. We make a loop to enable us to compare our search word 'BASIC' all along the article title, ARTICLE$. As the word 'BASIC' is nearing the end of the first title there is no need to go past the '2.6' in LABEL 2.6 (line 250).

LIVING WITH TOTL.LABEL 2.6 *

BASIC

That is why the loop is shortened by the length of the search word.

The length of the loop in line 110 is also shortened by the length of the star (*) and the month and year figure (– 7), because there is no need to compare there. But in this case I put a – 5 rather than a – 7 at the end of line 110 so the loop is actually long enough to check all the way to the asterisk (*). This allows you to view all titles in your program by searching '*'.

ARITHMETIC AT NURSERY SCHOOL * 6/83

When we are through checking the first title, we go to line 90 to get the next title. If in line 120 we happen upon a match, we go to the subroutine at line 200 to PRINT the title.

Line 200 tells the loop that it is finished, whether it is or not. This saves time. Also, if we didn't stop the loop there would be a problem when we RETURNed. The article on line 270 would print the same title on the screen again when it found the second word BASIC.

The title is PRINTed and we RETURN. Because the loop is finished we drop through the NEXT, then GOTO 90 for the next title.

I've added a number of enhancements to mine, an option to stop every five titles on the screen and an option for the printer.

OTHER USES

There are other uses for this partial string match routine.

If you have a large number of books you keep on file you can search the titles without having to remember the exact name.

Continued on page 95

Explorations With Assembly Language: Part II

by Eric Giguere

THE KERNAL

This month in Explorations With Assembly Language we take a look at a special feature built into Commodore ROMS, called the KERNAL (no, this has nothing to do with the military). The KERNAL is an area of memory used by assembly language programs to access certain input/output (I/O) capabilities of the computer. It is what we refer to as a 'jump table'. Let's stop there and examine what a jump table is.

JUMP TABLES

Say you're working on a large assembly language program and you move one of your major routines around. With a decent assembler this should pose no problem, but if you're using a monitor, you're going to have to go through the entire program and change any references to the routine to point to its new location. For example, say you move a subroutine used to print a message from its original location at $4E2F to $528F (the locations themselves are unimportant). You now have to go through all your program and change the references to $4E2F to the new location, $528F. If you only use the routine a couple of times (and you know where you use it) this is no problem. But if you access it frequently you could spend considerable time locating each JSR (jump to subroutine) or JMP (jump) that needs to be changed. If you use a jump table only one value needs to be changed. Here's why.

A jump table is nothing more than a series of consecutive JMP instructions, each one pointing to a different routine in memory, as in this example:

```
ERROR JMP $2397
DISK JMP $6FCD
MESSAGE JMP $528F
```

Notice that I've given each JMP a label, referring to what it does. The first JMP will jump you to an error routine, the second to a disk routine and the third to our message routine. How the routines actually work is irrelevant. Simply take note that if you do a JMP MESSAGE or JSR MESSAGE you're going to be brought to the JMP $528F, which will then transfer you to the routine at $528F. The jump table is really nothing more than a relay, moving you from one point in memory to another. If you move one of the routines around, all you have to do is change the appropriate JMP in the table. Because you don't move the jump table around (you never, ever do), you don't have to change the references in memory, and you're saved a lot of trouble.

WHY A JUMP TABLE?

The KERNAL is, as I mentioned, a jump table. It relays you with most of the important I/O routines in the computer. Of course, since you won't be moving these routines around, what's the use of having a jump table? Why not simply do a direct jump to the appropriate I/O routine? The KERNAL only exists to provide I/O compatibility between the different makes of Commodore computers. A call to a KERNAL routine on one computer will achieve the same function on another Commodore machine. This makes transporting programs from one computer to another a bit easier. (Please note that the KERNAL is only featured on Commodore machines.)

Even though the KERNAL is fairly standardized, there are some differences from one computer make to another. The routines from $FFCØ (OPEN) to $FFEA (UDTIME) are available on all Commodore machines, but the jumps at $FFDB and $FFDE point to two different routines on the VIC and 64. PET/CBM owners will have to keep this in mind whenever I refer to the KERNAL, since some of the routines I'll discuss aren't available on their machines. (PET/CBM owners can purchase the book "Programming the PET/CBM".)

SEEING THE KERNAL

If you've typed in the DIS/MON program from last month, use the D command to examine the KERNAL for your respective machine. For the VIC type

```
.D FF8A FFEA
```

and for the 64 use

```
.D FF81 FFEA
```

The disassembly will take a little while, so I recommend you be patient. If you have a printer, use the P ON option before disassembly, so that you have a hardcopy. When the program is finished, the hardcopy should look something like Figure 1. This is the 64 version, so the first 3 JMPs won't appear on the VIC printout. Also, the locations after the JMPs will be different, since the VIC I/O routines are located elsewhere from the 64's.

Figure 2 is an assembly listing of the KERNAL complete with labels and comments. Each time you wish to use a KERNAL routine you can refer to this chart. Simply do a JSR to the address shown in the ADDR column. The comment area provides a short description of what the routine does. I'll be discussing each routine in more detail in the next few months. Some of them require special preparation, so be sure to know what you're doing when you call a KERNAL routine.

If you use any of the KERNAL routines, be sure to access the address shown in the ADDR column, not the one in the OPERAND column. That's the actual instruction found in the KERNAL. If you want a description of what the routine does, check under the COMMENTS area.

Please note that though you may access the KERNAL routines, some of them require preparation for use. I'll be describing what you need to do to properly use each routine in the following months, but if you can't wait, simply pick up a copy of the VIC or C64 Programmer's Reference Guide, which details each KERNAL routine, what it does and how to use it.

```
FFA1 JMP $FF5B
FFA4 JMP $FDA3
FFA7 JMP $FD50
FFAA JMP $FD15
FFAD JMP $FD1A
FFB0 JMP $FE18
FFB3 JMP $EDB9
FFB6 JMP $EDC7
FFB9 JMP $FE25
FFBC JMP $FE34
FFBF JMP $EA87
FFC2 JMP $FE21
FFC5 JMP $FE13
FFC8 JMP $EDDD
FFCB JMP $EDEF
FFCE JMP $EDFE
FFD1 JMP $ED0C
FFD4 JMP $ED09
FFD7 JMP $FE07
FFDA JMP $FE00
FFDD JMP $FDF9
FFE0 JMP ($031A)
FFE3 JMP ($031C)
FFE6 JMP ($031E)
FFE9 JMP ($0320)
FFEC JMP ($0322)
FFEF JMP ($0324)
FFF2 JMP ($0326)
FFF5 JMP $F49E
FFF8 JMP $F5DD
FFFB JMP $F6E4
FFFE JMP $F6DD
FFE1 JMP ($0328)
FFE4 JMP ($032A)
FFE7 JMP ($032C)
FFEA JMP $F69B
FFED JMP $E505
FFF0 JMP $E50A
FFF3 JMP $E500
```

USING THE KERNAL

Figure 3 is an example of using the KERNAL routines in your own programs. To try it you may either type the listing into your assembler or you can use the BASIC listing in Figure 4, which will both load and activate the assembly language program. To activate it a second time simply type SYS 865 directly from BASIC and press RETURN.

What does it do? It simply prints our two messages ('PRESS ANY KEY' and 'PRESS THE STOP KEY') and waits for the appropriate keypresses. How does it do it? That's harder to explain. Three KERNAL routines are used: CHROUT, GETIN and STOP. CHROUT prints out the characters. All you do is load the ASCII value of a character into the accumulator and do a JSR CHROUT (or, if you prefer, JSR $FFD2). This is what we've done in the program. CHROUT is basically the same as PRINT CHR$(A); where A is the value in the accumulator (note the semicolon after the PRINT). GETIN is a routine that returns with the ASCII value of the key you just pressed in the accumulator. If you didn't press a key, the accumulator equals zero. The last routine, STOP, checks to see if you've pressed the STOP key. Like GETIN, if you haven't pressed the stop key the accumulator will equal zero.

Going through the program: lines 9-12 of the assembly listing define the two messages used. Lines 14 and 15 clear the screen by printing the ASCII character 147 (the same as saying PRINT CHR$(147)). Lines 17-22 print the first message by using a loop with the x-register. When it encounters a zero after the message it goes on to line 24, where GETIN is called to see if you've pressed a key yet. If not the program keeps on branching to WAIT1. When you do press a key the second message is printed out (lines 27-32) using the same method as before. The program will then wait for you to press the stop key, before returning to BASIC. Note: when you are returned to BASIC the computer will print a BREAK error. This is normal; ignore it.

Although the program is not the simplest way to do what it does, I think it's a good example of how to use KERNAL routines within your own programs.

NEXT MONTH

Next month in Exploration we are going to start looking more closely at the KERNAL routines and how to properly use them in our programs. In the meantime, any questions or comments can be directed to me at: Eric Giguere, c/o COMMANDER MAGAZINE, P.O. Box 98827, Tacoma, WA 98498.

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```
FILENAME: KERNAL.OBJ

LINE ADDR   CODE      LABEL   OPC OPERAND        COMMENTS
---- ----   ----      -----   --- -------        --------

0001 FF81              ***************
0002 FF81              *             *
0003 FF81              *  THE KERNAL *
0004 FF81              *($FF81-$FFF5)*
0005 FF81              *             *
0006 FF81              ***************
0007 FF81              ;
0008 FF81 4C 5B FF     CINT    JMP $FF5B          ;INITIALIZE SCREEN EDITOR
0009 FF84 4C A3 FD     IOINIT  JMP $FDA3          ;INITIALIZE INPUT/OUTPUT
0010 FF87 4C 50 FD     RAMTAS  JMP $FD50          ;INITIALIZE RAM, ETC.
0011 FF8A 4C 15 FD     RESTOR  JMP $FD15          ;RESTORE DEFAULT I/O VECTORS
0012 FF8D 4C 1A FD     VECTOR  JMP $FD1A          ;READ/SET VECTORED I/O
0013 FF90 4C 18 FE     SETMSG  JMP $FE18          ;CONTROL KERNAL MESSAGES
0014 FF93 4C B9 ED     SECOND  JMP $EDB9          ;SET SEC. ADDRESS AFTER LISTEN
0015 FF96 4C C7 ED     TKSA    JMP $EDC7          ;SEND SEC. ADDRESS AFTER TALK
0016 FF99 4C 25 FE     MEMTOP  JMP $FE25          ;READ/SET TOP OF MEMORY
0017 FF9C 4C 34 FE     MEMBOT  JMP $FE34          ;READ/SET BOTTOM OF MEMORY
0018 FF9F 4C 87 EA     SCNKEY  JMP $EA87          ;SCAN KEYBOARD FOR KEYPRESS
0019 FFA2 4C 21 FE     SETTMO  JMP $FE21          ;SET TIMEOUT ON SERIAL BUS
0020 FFA5 4C 13 EE     ACPTR   JMP $EE13          ;INPUT BYTE FROM SERIAL PORT
0021 FFA8 4C DD ED     CIOUT   JMP $EDDD          ;OUTPUT BYTE TO SERIAL PORT
0022 FFAB 4C EF ED     UNTLK   JMP $EDEF          ;SEND UNTALK COMMAND
0023 FFAE 4C FE ED     UNLSN   JMP $EDFE          ;SEND UNLISTEN COMMAND
0024 FFB1 4C 0C ED     LISTEN  JMP $ED0C          ;COMMAND SERIAL DEVICES TO LISTEN
0025 FFB4 4C 09 ED     TALK    JMP $ED09          ;COMMAND SERIAL DEVICES TO TALK
0026 FFB7 4C 07 FE     READST  JMP $FE07          ;READ I/O STATUS WORD (ST)
0027 FFBA 4C 00 FE     SETLFS  JMP $FE00          ;SET LOGICAL, 1ST AND 2ND ADDR.
0028 FFBD 4C F9 FD     SETNAM  JMP $FDF9          ;SET FILENAME
0029 FFC0 6C 1A 03     OPEN    JMP ($031A)        ;OPEN A LOGICAL FILE
0030 FFC3 6C 1C 03     CLOSE   JMP ($031C)        ;CLOSE A LOGICAL FILE
0031 FFC6 6C 1E 03     CHKIN   JMP ($031E)        ;OPEN INPUT CHANNEL
0032 FFC9 6C 20 03     CHKOUT  JMP ($0320)        ;OPEN OUTPUT CHANNEL
0033 FFCC 6C 22 03     CLRCHN  JMP ($0322)        ;CLOSE ALL I/O CHANNELS
0034 FFCF 6C 24 03     CHRIN   JMP ($0324)        ;INPUT CHARACTER FROM CHANNEL
0035 FFD2 6C 26 03     CHROUT  JMP ($0326)        ;OUTPUT CHARACTER TO CHANNEL
0036 FFD5 4C 9E F4     LOAD    JMP $F49E          ;LOAD RAM FROM A DEVICE
0037 FFD8 4C DD F5     SAVE    JMP $F5DD          ;SAVE RAM TO A DEVICE
0038 FFDB 4C E4 F6     SETTIM  JMP $F6E4          ;SET REAL-TIME CLOCK
0039 FFDE 4C DD F6     RDTIM   JMP $F6DD          ;READ REAL-TIME CLOCK
0040 FFE1 6C 28 03     STOP    JMP ($0328)        ;SCAN STOP KEY
0041 FFE4 6C 2A 03     GETIN   JMP ($032A)        ;GET CHAR. FROM KEYBOARD BUFFER
0042 FFE7 6C 2C 03     CLALL   JMP ($032C)        ;CLOSE ALL CHANNELS AND FILES
0043 FFEA 4C 9B F6     UDTIM   JMP $F69B          ;INCREMENT REAL-TIME CLOCK
0044 FFED 4C 05 E5     SCREEN  JMP $E505          ;RETURN SCREEN X,Y ORGANIZATION
0045 FFF0 4C 0A E5     PLOT    JMP $E50A          ;READ/SET CURSOR POSITION
0046 FFF3 4C 00 E5     IOBASE  JMP $E500          ;RETURNS BASE ADDR. OF I/O

ASSEMBLY COMPLETE.

SYMBOL TABLE:

CINT---$FF81   IOINIT-$FF84   RAMTAS-$FF87   RESTOR-$FF8A   VECTOR-$FF8D
SETMSG-$FF90   SECOND-$FF93   TKSA---$FF96   MEMTOP-$FF99   MEMBOT-$FF9C
SCNKEY-$FF9F   SETTMO-$FFA2   ACPTR--$FFA5   CIOUT--$FFA8   UNTLK--$FFAB
UNLSN--$FFAE   LISTEN-$FFB1   TALK---$FFB4   READST-$FFB7   SETLFS-$FFBA
SETNAM-$FFBD   OPEN---$FFC0   CLOSE--$FFC3   CHKIN--$FFC6   CHKOUT-$FFC9
CLRCHN-$FFCC   CHRIN--$FFCF   CHROUT-$FFD2   LOAD---$FFD5   SAVE---$FFD8
SETTIM-$FFDB   RDTIM--$FFDE   STOP---$FFE1   GETIN--$FFE4   CLALL--$FFE7
UDTIM--$FFEA   SCREEN-$FFED   PLOT---$FFF0   IOBASE-$FFF3

PROGRAM START: $FF81      PROGRAM END: $FFF6
```

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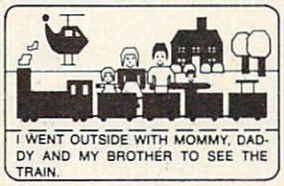

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```
FILENAME: KERNAL EX.OBJ

LINE ADDR   CODE      LABEL  OPC OPERAND          COMMENTS
---- ----   ----      -----  --- -------          --------

0001 033C                    ORG $033C
0002 033C              ;
0003 033C              ; SAMPLE PROGRAM USING KERNAL ROUTINES
0004 033C              ;
0005 033C              CHROUT EQU $FFD2
0006 033C              GETIN  EQU $FFE4
0007 033C              STOP   EQU $FFE1
0008 033C              ;
0009 033C 50 52 45     MESG1  ASC .PRESS ANY KEY.
          53 53 20
          41 4E 59
          20 4B 45
          59
0010 0349 0D 0D 00           BYT 13,13,0
0011 034C 50 52 45     MESG2  ASC .PRESS THE STOP KEY.
          53 53 20
          54 48 45
          20 53 54
          4F 50 20
          4B 45 59

0012 035E 0D 0D 00           BYT 13,13,0
0013 0361              ;
0014 0361 A9 93        START  LDA #147             ;PRINT CLEAR SCREEN
0015 0363 20 D2 FF           JSR CHROUT            ;CHARACTER
0016 0366              ;
0017 0366 A2 00              LDX #0
0018 0368 BD 3C 03     LOOP1  LDA MESG1,X          ;LOAD CHARACTER
0019 036B F0 06              BEQ WAIT1             ;CHECK IF BYTE IS 0
0020 036D 20 D2 FF           JSR CHROUT            ;PRINT IT IF NOT
0021 0370 E8                 INX
0022 0371 D0 F5              BNE LOOP1             ;ALWAYS LOOP (ACC<>0)
0023 0373              ;
0024 0373 20 E4 FF     WAIT1  JSR GETIN            ;CHECK FOR KEYPRESS
0025 0376 F0 FB              BEQ WAIT1
0026 0378              ;
0027 0378 A2 00              LDX #0
0028 037A BD 4C 03     LOOP2  LDA MESG2,X          ;REDO FOR MESSAGE #2
0029 037D F0 06              BEQ WAIT2
0030 037F 20 D2 FF           JSR CHROUT
0031 0382 E8                 INX
0032 0383 D0 F5              BNE LOOP2
0033 0385              ;
0034 0385 20 E1 FF     WAIT2  JSR STOP             ;CHECK FOR STOP KEY
0035 0388 D0 FB              BNE WAIT2
0036 038A 60                 RTS                   ;LEAVE PROGRAM
0037 038B              ;

ASSEMBLY COMPLETE.


SYMBOL TABLE:

CHROUT-$FFD2   GETIN--$FFE4   STOP---$FFE1   MESG1--$033C   MESG2--$034C
START--$0361   LOOP1--$0368   WAIT1--$0373   LOOP2--$037A   WAIT2--$0385
```

```
5 REM KERNAL EXAMPLE
6 REM FOR VIC AND C64
7 REM BY ERIC GIGUERE
8 :
10 FOR I=828 TO 907: READ J: POKE I,J: NEXT: SYS 865
100 DATA 80, 82, 69, 83, 83, 32, 65, 78, 89, 32, 75, 69, 89, 13
110 DATA 13, 0, 80, 82, 69, 83, 83, 32, 84, 72, 69, 32, 83, 84
120 DATA 79, 80, 32, 75, 69, 89, 13, 13, 0, 169, 147, 32, 210, 255
130 DATA 162, 0, 189, 60, 3, 240, 6, 32, 210, 255, 232, 208, 245, 32
140 DATA 228, 255, 240, 251, 162, 0, 189, 76, 3, 240, 6, 32, 210, 255
150 DATA 232, 208, 245, 32, 225, 255, 208, 251, 96, 0

READY.
```


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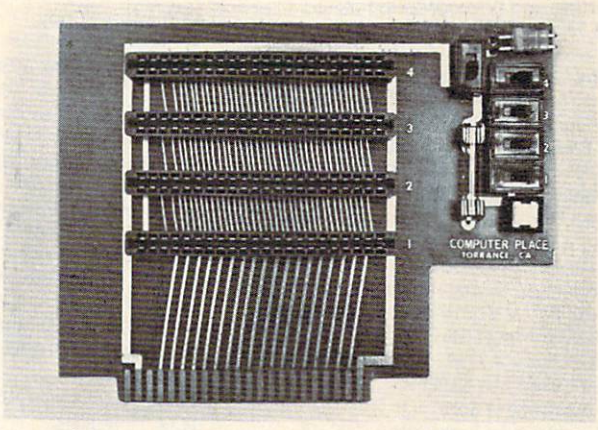

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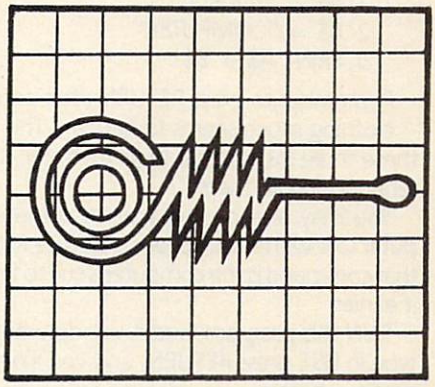

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B*A*S*I*C Training

by Jonathan Secaur

LESSON 3

Computer programs

In the labs in this series so far, the computer has given you a response as soon as you press RETURN. The computer says ?SYNTAX ERROR or ?TYPE MISMATCH ERROR or CARNATION or whatever, right away. If you type a number in front of some statement, though, something different happens.

1) Take the statements from the last lab that add two strings together, and type them with numbers in front, like this:

```
1. A$ = "MICRO"
2. B$ = "COMPUTER"
3. PRINT A$ + B$
```

Remember to press RETURN after each line.

Nothing much seems to happen. The computer has stored these three instructions in its memory; it is waiting to be told when to follow them.

You may already know what command makes the computer follow the instructions. Just type RUN and press RETURN: that command is the computer's cue to finally do what you told it earlier.

RUN this program, and it will do what you expected. Now type in LIST, press RETURN, and you'll get a copy of what you typed in before.

How is RUN different from LIST?

2) Any whole, positive numbers from zero on up to 63999 can be used as line numbers. You could start numbering the lines from 1, as you just did in the previous example, but most programs are written with 10 as the first number, then 20, 30, and so on. That way, you can go back and insert lines between others if you need to.

Say you wanted to make a program to print the limerick below. First, type in NEW and press RETURN to erase the old program.

```
10 PRINT "A FAILING MATH STUDENT,
  MCGRUDER"
20 PRINT "DECIDED HE HAD TO BE A
  SHREWDER."
30 PRINT " 'STEAD OF COPYING
  VOLUMES"
40 PRINT "HE BOUGHT A NEW
  MICROCOMPUTER."
```

Type in the limerick and RUN it. It's not very funny, and it's also not a limerick, because they always have five lines. So, type in:

```
35 PRINT "OF NUMBERS IN COLUMNS"
```

and RUN it again.

It's still not all that funny, but at least it is a limerick. The point is, the computer will automatically insert new lines where they belong, sorting them by line numbers.

Type in NEW to erase the limerick program, and then type in:

```
30 PRINT "MIXED-UP"
10 PRINT "THIS"
40 PRINT "PROGRAM"
20 PRINT "IS A"
```

LIST the program, and you can see that the computer instantly sorts the lines by number and lists them correctly. Now RUN it.

3) Since most computer programs are too long to fit on the screen, the LIST command can be used to look at any part of a program. Since every line in a BASIC computer program is numbered, the LIST command can be made to find parts using those numbers. Write down the line numbers the computer would list (just the numbers, not everything the computer would list) if you typed in each of the commands below. Type in each command and see if you were right.

a) LIST 20 _____

b) LIST 20-30 _____

c) LIST -30 _____

d) LIST 30- _____

4) The programs you've typed in so far are so simple that all they do is print something and then stop. Worse yet, they would always print the same thing. If a computer is going to be useful, it has to be able to accept and act on new information each time it is used. INPUT is one way to give the computer information.

Let's start with an easy one. Erase the computer's memory (remember how to do that?) and type in:

```
10 PRINT "PICK A NUMBER"
20 INPUT NUM
30 PRINT "YOU PICKED"; NUM
```

remembering to press RETURN after each line. There is nothing new here until line 20. The computer will stop and wait at line 20 when the program is run. It will print a question mark as your prompt or cue that it's your turn to do something. If you type in any number when the program runs, the moment that you press RETURN you give a value to the variable called NUM. From that point on, NUM equals the number you just typed. Then the computer will instantly go on to line 30 and print YOU PICKED and the number you chose. It's not much of a program, but it does show how INPUT works.

There is also something new in line 30 — the semicolon after the quotation marks. That keeps the computer printing on the same line until it prints out the value for NUM. Normally a computer will automatically jump to the next line after the final quotation mark of a string that is beign printed. The semicolon is a message to the computer that there is more to be printed yet.

5) In the program now in memory, the computer is expecting a number to be typed in, since NUM is a numeric variable. How do you know that NUM is not a string variable?

What happens if you don't type in a number when the program is run? If you don't type in anything at all, the computer will just keep patiently waiting until it wears out, probably years from now. What happens if you type in a number word, like FIVE? RUN the program and type in FIVE when you see the question mark. What happens when you press RETURN?

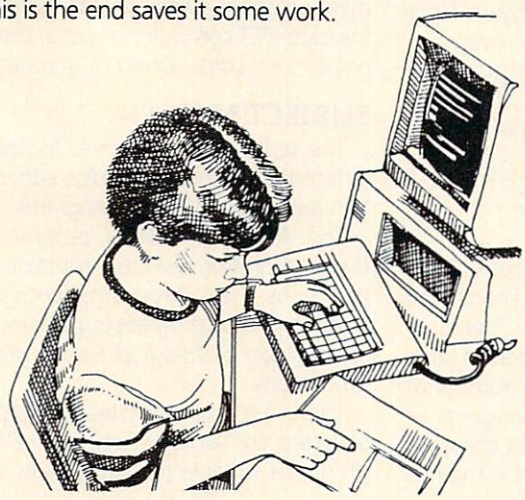
Some of the programs in later labs will keep on asking you for information over and over again. If you want to jump out of a program during an INPUT statement, just hold down the STOP key and firmly press the RESTORE key. (On the PET I used to write this article, simply pressing RETURN will make the computer quit waiting for an answer.)

6) Now let's try an INPUT with a string variable. Clear the memory and type in this little program.

```
10 PRINT "AN IMPRESSION OF TARZAN"
20 PRINT
30 INPUT "WHAT'S YOUR NAME"; N$
40 PRINT "ME COMPUTER, YOU"; N$
50 END
```

Notice that in line 30 we can put something in quotes after the INPUT to tell people using the computer what to do. The message in quotes is called a prompt. Also notice that there is a semicolon after the quotation marks and before the variable name.

Another new feature in this program is line 50, END. The computer will stop automatically after the last line with instructions in it, but not until it checks each line number up into the 60,000's. Think of it as doing the computer a little favor; telling it, this is the end saves it some work.



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Electronic Blackboard

How many of you were told when you were shopping for your computer about the abundance of public domain software that was available for the Commodore 64? To hear the salesman tell it there was a never ending gold mine somewhere just waiting to be copied. Was the software just a figment of the salesmen's imagination? Does it exist and exactly what does the Public Domain Series contain? Yes, the series does exist and this month I am going to give an overview of the software and attempt to clarify some of the misconceptions regarding the series.

In addition to the Public Domain Series I am also reviewing three commercially made math programs. TINY TUTOR from COMPUTER SOFTWARE ASSOCIATES is a program that will cheerfully introduce young children to beginning addition and subtraction concepts. The MATH WIZ SERIES from MERRITT SOFTWARE, INC. can help students become math whiz kids when dealing with the addition and subtraction of mixed numbers. And last of all I have MATH BY THE NUMBER from VIDEO HOUSE which will generate almost endless individualized whole number drills.

TITLE:	***1983-84 PUBLIC DOMAIN EDUCATIONAL SOFTWARE***
FORMAT:	Diskette
PRICE:	$325.00 for 58 diskettes
MODEL:	Commodore 64, PET 2.0, PET 4.0 and 8032 CBM
AUDIENCE:	Early Childhood through adult
SUMMARY:	An updated collection of educationally related programs and games.
SOURCE:	SOFTWARE CRAFTS 405 Fairhaven Drive Hurst, Texas 76054 (817) 656-1805

Most Commodore 64 owners have heard about the vast wealth of Public Domain software that is available for the Commodore machines but they have no idea what the software consists of or where to get it.

First of all, what is public domain software? It is programs that an individual has written and chosen not to copyright but instead given them to a particular group or organization to share with others—the public. Or they are programs that have evolved from the early "hacker computer days" before it was even thought worthwhile to copyright certain applications. Many of these programs cannot be traced back to any specific author. Each generation of users have modified and perhaps combined these programs to fit their individual needs.

Programs entered onto diskette or cassette from books and magazines ARE NOT public domain unless they are so stated. In fact many publications have taken the stand that the right to own a copy of programs listed in their publication lies only with the owner of the publication and any copies distributed to nonowners without editorial permission is a copyright infringement.

I am sure that many of the older PET user's groups have vast libraries that they have written and collected. But many of the newer owner's are isolated and do not have access to these groups. Therefore, some commercial firms are now distributing Public domain software. Since the programs already belong to everyone, you are not really buying the programs but instead are paying a nominal charge for the copying medium and the time involved.

EDUCATIONAL SERIES FROM CANADA

The EDUCATIONAL SERIES from SOFTWARE CRAFTS originated in Canada. The Canadian school system has been involved with computer education utilizing Commodore computers for a number of years. They have amassed hundreds of programs for the classroom. A group of Canadian Educators and the Canadian division of Commodore Business Machines have spent the last two summers documenting, organizing and updating these programs. Many of the programs were written for the original PET computers and some of the programs are enhanced translations of programs written for other machines. Then there are a large number of programs that are really lesson plans or drill sheets that have been written by innovative teachers to teach a particular concept or provide drill for a particular skill.

All of the diskettes follow the same format. There are approximately fifteen programs contained on each diskette. After loading the menu and selecting a particular program, the user is presented with a second menu containing four choices. The choices are: (1). Begin Program, (2). Student Instructions—usually very complete with no further instructions needed for execution of the program. (3). Teacher Instructions—contains the name of the program author, if known, the revisor of the program and a disclaimer that this program is in the public domain. Also contained in this section are some hints for modifying data statements in some of the programs. (4). Exit Program—this will put the user back to BASIC, not back to the menu. Also during most of the programs there is some provision for pushing "h" or another key for help. This will usually return the user back to the student instructions. Since a lot of these programs were originally written for the older PET computers most of them do not contain color, sound or graphics.

SUBJECT MATTER

The series offers programs for thirteen different academic fields plus administration and a disk of utility programs.

The ADMINISTRATION programs are featured on two diskettes containing ten programs. The programs consist of: grading and record keeping utilities, quiz and test generators and teacher training simulations.

There are two diskettes of BUSINESS software containing thirty two different programs suitable for junior high school

and above. The programs are mostly designed for calculation of variables, generating simplified tables and demonstrating concepts introduced in beginning accounting and bookkeeping classes. There are also several simple economic simulations and a couple of typing drills.

COMPUTER SCIENCE consists of two diskettes containing eighteen programs. The programs are mainly turorials suitable for junior high school or above. Also included are limited simplified versions of LOGO and PILOT languages.

One of the larger segments of the series is the LANGUAGE ARTS programs. There are nine diskettes containing one hundred forty four programs ranging in difficulty from alphabet recognition to Shakespearean quizzes. The majority of the programs are intended for the elementary school age level and many of the programs are designed as drill sheets or to teach a single grammatical concept e.g. correct usage of "a" and "an". There are a series of elementary spelling drills and games and numerous vocabulary drills from the "Mr. Mugs" reading series used in Canada.

One diskette with sixteen programs focuses on FRENCH vocabulary drills and math programs with French instructions.

Fve diskettes contain sixty nine educational GAMES. These are mostly keyboard games, simple adventures and many of the old classics found in beginning or general introduction to computing books. A few of the games have some primitive graphics but there is no color and very few sound effects.

There are thirty nine GEOGRAPHY programs contained on three diskettes. The difficulty levels range from upper elementary through high school. The programs quiz students on world geographical facts, teach map skills and present simple geograhic simulations.

One diskette called LANGUAGE with five programs has Filipino, Latin and Swedish word drills.

The four diskettes named LOGIC AND PROBLEM SOLVING with fifty-one programs are a series of thinking games. There are some new games plus some of the old favorites such as "Othello", "Yahtzee" and "Concentration".

By far the greatest collection or programs are in the subject area of mathematics. There are fifteen diskettes with two hundred forty different programs. There are programs for all grade levels ranging in difficulty from primary number identification through trigonometry and bionomial equations. Unfortunately the programs are grouped alphabetically by titles instead of by subject or difficulty level. Therefore, there are some odd combinations contained on the same diskette. For example, following a drill on the utilization of scientific notation is a program that teaches shape identification to young children.

The MUSIC diskette has six programs that deals mostly with music theory.

The disette labeled HEALTH AND PHYSICAL EDUCATION programs covers health and subjects, reaction times and drivers' education. The programs are geared mostly to junior and senior high school students.

The SCIENCE sections has seven diskettes with one hundred programs aimed mostly at junior high school and beyond. The programs are mainly physics and chemistry drills and tutorials.

The five programs on the diskette under the heading TECHNOLOGY are mainly drills and tutorials on electronics with one exception which is a program containing a tutorial and drill on Braille.

The last diskette has ten UTILITIES programs that would be useful to anyone using a Commodore system. Included are disk utilities and an alpha sort program.

PROGRAM VALUE

Even though this set of PUBLIC DOMAIN Software offers some good programs and some unique educational applications it should not be compared to programs commercially designed for the Commodore 64. Many of the programs

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were written by novices to meet an individual need or teach a specific concept then expanded and improved by others. The original authors did an admirable job or writing these programs and we owe them a debt of gratitude for sharing their work with us. But these programs do not utilize the full graphic and sound capabilities of the Commodore 64 nor are they designed by professional programmers.

This would be an excellent set of software for a user's group or a school to purchase. Then others could copy the programs that are of interest to them to either disk or tape. I would not advocate that parents purchase the entire series for home use because of the expense involved and also because some of the programs are designed as computerized work sheets or are designed to teach a specific concept; therefore, a student would lose interest in some of the programs after running through them a couple of times.

Since these are public domain programs some of them have been offered for distribution before. Last year *COMMODORE* offered a partial set of these programs. The Commodore Brand did not have a menu program and some of the programs on this current set have been revised and improved.

In conclusion while I don't feel that these seven hundred plus programs meet every conceivable educational need I do see some very interesting possibilities. In the computer age nothing is supposed to be bended, folded, spindled or mutiliated. Well try it with these programs. They are easily listed and all the dull boring data statements are already done for you. So why not try adding improvements. Put a few sprites here, some bells and whistles there and then throw in some color. You might even surprise yourself with what you can accomplish. Then pass the program on to a friend and see what he can add to it. Then you improve upon what he did. Before you know it no one will recognize the original program and there will be some more super public domain software floating around.

TITLE:	***TINY TUTOR***
FORMAT:	Cassette
PRICE:	$19.95
MODEL:	Commodore 64 and VIC-20
AUDIENCE:	Ages 3-7
SUMMARY:	Early childhood educational program that aids in teaching number recognition, addition and subtraction.
SOURCE:	COMPUTER SOFTWARE ASSOCIATES Micro Software International Inc. The Silk Mill, 44 Oak Street Newton Upper Falls, MA 02164 (617) 527-7510

Turn on the computer and even the younger tots will come running wanting to push the buttons. TINY TUTOR from Computer Software is designed to let the future computerists have their turn at the computer while being introduced to beginning basic math concepts.

CHUG-A-CHUG TROLLYS

The design of TINY TUTOR is delightfully simplistic. The program is introduced with numbers appearing on a number line at the top of the screen and an appropriate number of small trolly cars at the bottom of the screen. Thus, the young child can count along as the number line appears. After the number line is completed a vertical addition or subtraction problem appears in the middle of the screen followed by a graphic demonstration by the trolly cars. If the problem is addition, a row of blue trolly cars chug out under the red trolly cars. If the problem features subtraction an appropriate number of trolly cars flash and disappear one by one so that the child can count the cars remaining. If the correct answer is entered from the keyboard the chain of trollys flash and the screen clears. If an incorrect response is entered the screen flashes along with a beeping sound. After three incorrect responses the correct answer is quietly displayed on the screen. After ten problems the computer counts the number of correct responses. If all ten problems were answered correctly there is a flashing display accompained by a musical scale of sound effects.

UNCLUTTERED GRAPHICS

The graphics utilized in TINY TUTOR are very simplistic but quite effective. The trollys are familar to all children and the colors are pleasantly combined. The chug-a-chug sound is the type that delights children and keeps their attention without being overpowering.

EDUCATIONAL VALUE

TINY TUTOR would be an enjoyable way to introduce children to the computer and basic addition and subtraction. The program is very low keyed and relaxed. There are no time pressures. The child can go as fast or as slow as he wishes. If mistakes are made there are very gently non threatening corrections that are quickly forgotten. COMPUTER SOFTWARE ASSOCIATES have designed a quality product in TINY TUTOR that many children will remember in later years as a happy childhood experience with math and the computer.

TITLE/	***MATH WIZ SERIES I (Entire Series $100)***
PRICE:	MIXED NUMBER ADDITION $39.95 MIXED NUMBER SUBTRACTION $39.95 THE HOWIE PETERSON DRILLS $10 each
FORMAT:	Diskette
MODEL:	Commodore 64 and PET
AUDIENCE:	Grades five through eight
SUMMARY:	CAI Drills and Tutorials
SOURCE:	MERRITT SOFTWARE, INC. P.O. Box 1504 Fayetteville, AR 72702 (501) 442-0914

MATH WIZ SERIES I is a set of Computer Assisted Instruction (CAI) drills and tutorials designed for classroom use.

MIXED NUMBER TUTORIALS

The mixed number programs are tutorials that will systematically take students through the addition and subtraction of mixed numbers in sequential steps. There are two stages to each of the tutorials. Stage one offers basic instruction involving each step of the operation. Prompts are given and concept difficulties are analyzed and corrected (ex. you added the whole numbers fine, but you've subtracted the answers). After the student has combined the fractions correctly he is led through a reduction process with the aid of a mulitple choice format and cursor question marks. When the student has mastered the concepts of stage one he is automatically advanced to Stage Two. During Stage Two there are no explanatory prompts, just the cursor question mark and questions asking if the problem can be reduced. If the student continues to answer problems correctly during Stage Two, the difficulty level will increase. If a student fails to answer a problem during Stage Two he is automatically transferred back to Stage One for

tutorial help with the particular concept that he is not applying correctly.

The student may choose to terminate the program at the end of any problem. The computer will then display a summary of the session containing the number of problems tried, number finished and a percentile score.

SOUND AND GRAPHICS

During the tutorials there are no graphics. The numbers are displayed with the whole number being double the size of the fractions. Periodically, after a series of correct answers "THE WHIZ" will flash accompanied by lightning bolts and sound effects. During the program on the Commodore 64 there are two distinct tones that signal correct and incorrect responses.

EDUCATIONAL VALUE

The tutorials will take students step by step through the process of adding, subtracting and reducing whole numbers. The computer is very user friendly and relates to the student in a conversational manner. Positive reinforcement and encouragement is given after each correct response and a simple non-judgmental "that's wrong" is stated after incorrect responses. The tutorials would be useful for individualized instruction in either the classroom or at home.

HOWIE PETERSON DRILLS

All kids like to play the computer and come out ahead. The HOWIE PETERSON DRILLS allow them to do just that. Howie Peterson is an imaginary opponent (the computer) that competes with real kids at selectable skill levels—e.g. the teacher can select the percentage of problems that Howie will do correctly. The teacher can also select the difficulty of the problems presented in any of the four drills involving the four basic math operations—addition, subtraction, division and multiplication of whole numbers. From one to ten students can play with Howie with each one taking a turn at the keyboard. At the end of the drill the number of correct responses and a percentile score is given for each student.

Younger students would especially enjoy playing with Howie. It is sure nice to have someone else making mistakes sometimes. Also it would be a good exercise to have the students spot Howie's errors before the computer does.

DOCUMENTATION

The MATHWIZ SERIES are accompanied by a twenty nine page booklet that fully explains all aspects of the program. Detailed explanations are given for administration of the programs. There are numerous examples and sample problems given along with detailed objectives.

CAMP DIRECTORY, "CAMPS 'N COMPUTERS"

SUNNYVALE, CA (Feb. 15)—The traditional fun and challenge of summer camps now includes the bit and bytes and RAMs and ROMs of computer programming. To help parents and children choose from the growing number of day and resident summer camps that provide computer instruction, Verbatim Corporation, in cooperation with the American Camping Association, is offering a free reference guide, "Camps 'n Computers—A Directory of Summer Computer Camp Instruction in the United States."

With more than 100 listings, the directory divides the camps into six regions: New England, Middle Atlantic, South, Midwest, Southwestsd and West. Each entry includes the camp contact, address and telephone number, tuition, length of sessions and recreational facilities. Also included are the number and types of computers, the student/computer ratio, instructor qualifications, computer programs taught and the number of daily computer hours available to campers.

For a copy of the directory, send a check for $1 (for postage and handling) payable to Verbatim, at: "Camps 'n Computers," Suite 228, 4966 El Camino Real, Los Altos, CA 94022.

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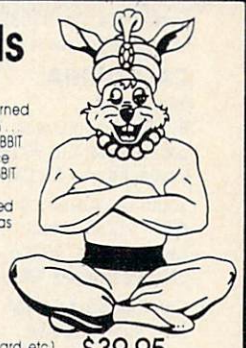

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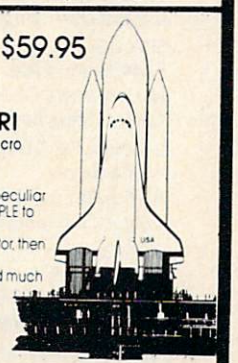

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User Groups & Clubs Directory

Users Groups

USER GROUPS AND CLUB DIRECTORIES

To be included in future issues in the User Group and Club Directories, your group or club must supply *COMMANDER* with the following information:

1. Name of organization
2. Mailing address
3. Contact person and telephone number
4. Name of newsletter or publication
5. Special interests

Send your information to User Groups and Club Directories, *COMMANDER*, P.O. Box 98827, Tacoma, WA 98827.

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4578 Monarch Drive
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Contact Michael Stephany

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Contact Karen McCamy

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Contact Steve Botts

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Contact Jane Campbell

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Contact Roger Tierce

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NATIONAL USER GROUPS

National VIC-20 User Group
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Omaha, Ne. 68134
Contact George Kaywood

United States Commodore Users Group
P.O. Box 2310
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Contact Rich Tsukiji

Toronto Pet Users Group
1912A Avenue Road, Suite 1
Toronto Ontario Canada M5M 4A1
Contact Chris Bennett

Why Should I Join A Users Group?

by Colin F. Thompson

Commander recognizes the valuable services provided to the Commodore community by the many Commodore User Groups across our country and throughout the world.

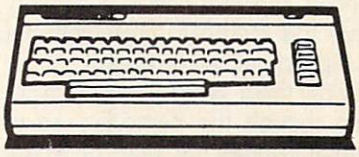
By publishing the names of the various Groups, we hope to stimulate the interest of Commodore owners who have not yet joined a local group.

If you don't know what a User Group can do for you, or if you haven't found a local group, please check the following listing and contact the club nearest you.

User Groups provide the setting where an inexperienced computer owner may seek help with any problem they encounter. Most Groups are composed of some computing experts and many others seeking knowledge and guidance. The atmosphere of Group meetings is invariably cordial, friendly and helpful. Newcomers may meet with others and discuss their mutual problems and solutions. Many Groups feature a guest speaker at the monthly meetings. Special Interset Groups (SIGs) are popular in many Groups. SIGs are like sub-chapters of the Group—each concerning itself with a different facit of computing. For example, if you want to learn BASIC, or machine language, or how to use a modem, you could join one of the SIGs in that field. Each SIG discussion leader usually holds a 'class' in his home once a month.

Another service provided by CUGs is the Public Domain Library. Most Groups have a collection of programs in the library that a member may check out and copy for a small fee. Most Groups publish a monthly newsletter which is sent to each member. Newsletters are an excellent source information.

If you cannot locate a nearby Group in the following listing, contact a computer store in your area. They usually know all the groups in the area. If you live in a remote area of the country that has no Group within driving distance, you may wish to join one of the national groups. Don't be afraid to go to a meeting. Newcomers are always welcomed. Remember, everyone was a newcomer, once.



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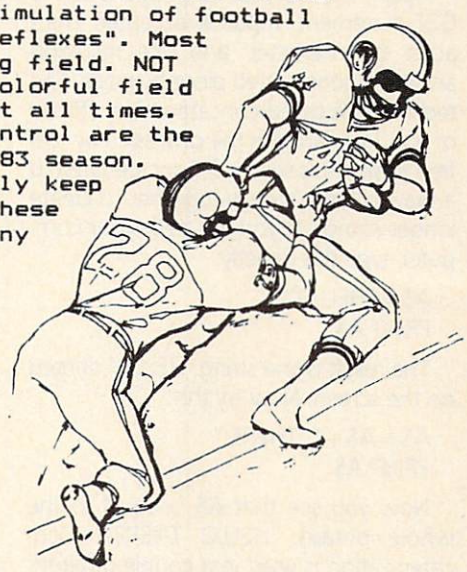

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BASIC Education: Programming for Learning

by Andy Van Duyne

This month we will continue to explore the idea of user-friendly input routines. In the last installment, we developed a routine that would accept single digits within a specified range, while ignoring all other key strokes.

That elemental routine has been expanded and included in a spelling program this month to allow the input of multiple-character responses, or, as you may call them, words! Keep in mind, that even though this particular use of the routine involves the input of words, the same method can be used for obtaining numerical responses that are negative and/or have more that one digit. It only takes a short reworking of the error-trapping lines in the routine.

Again, the heart of the routine is the GET statement. Input is accepted character by character, and the resulting answer is constructed piece by piece. The technique is called concatenation. (Those of you familiar with the process may feel free to skip this section.) Concatenation is a way to 'add' strings together to create longer strings. If you are near your computer, type this directly:

```
A$ = "HELLO"
PRINT A$
```

The result is the string 'HELLO' printed on the screen. Now try this:

```
A$ = A$ + " ,THERE."
PRINT A$
```

Now you see that A$ is equal to the whole phrase "HELLO THERE." Concatenization is used in a couple different ways in the accompanying program. For example, no matter if the user is right or wrong in their response, the program shows the correct spelling of the word. This message is tacked onto the advisement as to the accuracy of the response as follows:

```
116 ifan$ = w$thengosub240:
  goto120
118 gosub250
120 printleft$(d$,15);
122 q$ = q$ + " the word was " +
  chr$(18) + w$ + chr$(146)
  + ".":gosub290
. . .
240 rem right
244 q$ = "very good!!"
249 return
250 rem wrong
252 printleft$(d$,11)sp$
254 q$ = ''no,''
259 return
```

The concatentation occurs in line 122. Now, let's see how the technique is used in the input routine:

```
230 rem get answer
231 poke198,0:an$ = ""
232 geta$:ifa$ = chr$(13)then237
233 ifa$ = chr$(20)andlen(an$)
  0thenan$ = left$(an$,len(an$)-1:
  goto236
234 ifa$  "a"ora$  "z"then232
235 an$ = an$ + a$
236 printleft$(d$,11)tab(4)an$"
  ":goto232
237 ifan$ = ""then232
238 return
```

In line 231 the keyboard buffer is cleared, and the string that is destined to become the answer is set to null. (As mentioned last month, clearing the buffer is something that should be done before each use of the GET statement—otherwise the residue of impatient keypresses might be still lurking in the buffer and be interpreted as intended input.) Line 232 reads the keyboard (or more properly, the bottom of the buffer) for a character, and checks for a carriage return. The delete key is intercepted by line 233, and, if the string is longer than zero characters, the rightmost character is removed from the string. Line 234 establishes the limits for all other acceptable characters—they must fall within the alphabet. The routine to this point, then, will allow the input of the following:

```
chr$(13)   [RETURN]
chr$(20)   [DELETE]
All characters A-Z
```

All other characters will be ignored. Line 236 displays the current value of the response in the screen. This line is needed because, unlike the INPUT statement, GET provides neither a cursor nor a display of the input. The space is included to account for the delete function—without it the last character would still appear on the screen, even though it would have been severed from the actual response string. Line 237 checks to see if an answer of some sort has indeed been generated, or if the user is accidentally attempting to return a null string. If some sort of answer that falls within the restrictions has been generated, the routine will end at line 238, returning to the place from which it was called.

You can see, by changing just a few of the parameters, how this routine can be modified to accept multi-digit or negative numbers.

As you may have observed, there is only one program listing here, instead of discrete versions for the VIC and 64. Between my school and home, my software may have to run on either machine in either location, and it is sometimes in-

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convenient to create two separate versions if the effort is not really required. This program was designed so that it can be loaded and RUN on either machine—the screen display is automatically adjusted. This is done by PEEKing address 213, which, on both computers, contains the value of the current screen line length. This value is assigned to the variable LL, and is used each time a situation might occur where the screen width difference might have an effect—most text is printed by using the routine at 290. True, the program could have been written to format for the 22 column VIC screen, but this would result in a rather awkward looking left-hand only display on the 64. The main trade-off here is the lack of sound routines—because of the large difference in the sound addresses and procedures, sound routines are not as easily adapted in this 'universal' approach. If you are certain that this program will be used exclusively on one or other of the machines, you may wish to change the formatting section, and add some sound routines specific to your machine. As I always remind you, these programs are provided as demonstrations of types and techniques, and it is expected that you will add to them and adapt them to your own tastes and situations.

SPELLING DRILL is designed to give the user practice in spelling 'sight' words. Ten words can be included in program DATA—these are easily changed by modifying line 42 to include any word list you would like. When RUN, a list of the words contained in the drill is presented to the user so that they may study them. When they feel they are ready, the user can begin the drill. The words will be flashed, one at a time in random order, for a time at the top of the screen. The length of time they are shown is determined by the selection of the skill level at the beginning of the program. After seeing the word in question, the user then has to type the word into the computer, where the responses are evaluated. What good is this, you say? It should be very easy for a student to see a word and then immediately spell it again. However, the simple act of typing the word back into the computer forces the student to think of the correct spelling and reinforces that concept. Another important thing that occurs in the instance of an incorrect response is the immediate erasure of the 'wrong' entry from the screen. While you might think that it should remain so that the student can compare their response with the correct one (which is shown after ALL responses), the fact is that the misspelled visual stimulus can have a detrimental effect by reinforcing the incorrect image. All words that are not spelled correctly are saved, and are listed (correctly) at the end of the RUN to allow the user to determine which words need more attention.

I hope that you are enjoying and are able to use this series of articles, and as always, your comments and suggestions are welcome. If you have ideas or questions you would like to have discussed here, do not hesitate to send them to me in care of *COMMANDER*. Until next time, enjoy yourself!

```
 10 REM SPELLING
 11 POKE254,10
 12 PRINT"[clr]"
 15 X=RND(-TI)
 20 D$="[home][down, 19 times]"
 22 LL=PEEK(213):IFLL=39THENPOKE53281,1
 24 FORN=1TOLL:SP$=SP$+"[sp]":NEXT:IFPEEK(
    254)=20THEN30
 25 PRINTCHR$(147)TAB(LL/2-7)"[down, 4 time
    s]SPELLING[sp]DRILL":PRINT
 26 PRINTTAB(LL/2-8)"[blu]BY[sp]ANDY[sp]VAN
    [sp]DUYNE"
 27 PRINTD$;:GOSUB280
 30 PRINTCHR$(147):DIMW$(10),O%(10),WR$(10)
 40 FORN=1TO10:READW$(N):NEXT
 42 DATA ONE,TWO,THREE,FOUR,FIVE,SIX,SEVEN,E
    IGHT,NINE,TEN
100 REM MAIN LOOP
102 GOSUB300:WR=0:GOSUB210:PRINT"[clr]"
104 GOSUB200
110 FORW=1TO10:PRINT"[home]NUMBER:"W:FORP=
    1TO1E3:NEXT
112 W$=W$(O%(W)):GOSUB220
114 PRINTLEFT$(D$,11)"->":GOSUB230
116 IFAN$=W$THENGOSUB240:GOTO120
118 GOSUB250
120 PRINTLEFT$(D$,15);
122 Q$=Q$+"[sp]THE[sp]WORD[sp]WAS[sp]"+CHR
    $(18)+W$+CHR$(146)+".":GOSUB290
130 PRINTD$;:GOSUB280
136 PRINT"[clr]":NEXTW
140 IFWR=0THENGOSUB260:GOTO150
142 GOSUB270
150 PRINT"[down]":GOSUB280
152 PRINT"[clr][down, 2 times]":Q$="WOULD
    [sp]YOU[sp]LIKE[sp]TO[sp]USE[sp]THIS[sp]
    DRILL[sp]AGAIN?[sp](Y/N)":GOSUB290
155 GETA$:IFA$="Y"THENPOKE254,20:RUN12
156 IFA$="N"THENEND
157 GOTO155
200 REM SHUFFLE ORDER
201 FORN=1TO10:O%(N)=0:NEXT
202 FORN=1TO10
203 Z=INT(RND(1)*10)+1:IFO%(Z)<>0THEN203
204 O%(Z)=N:NEXT
205 RETURN
210 REM DISPLAY WORDS
212 Q$="THIS[sp]DRILL[sp]CONTAINS[sp]THESE[
    sp]WORDS:":GOSUB290:PRINT
214 FORZ=1TO10:Q$=W$(Z):GOSUB290:NEXT
```

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```
216 Q$="[down, 2 times]TOUCH[
    sp][rvs-on]RETURN[rvs-off]
    [sp]WHEN[sp]YOU[sp]ARE[sp
    ]READY[sp]TO[sp]BEGIN.":G
    OSUB290:GOSUB282
219 RETURN
220 REM FLASH WORD
221 PRINT"[home][down, 3 time
    s]"TAB(LL/2-(LEN(W$)/2))W
    $
222 FORP=1TO500*PEEK(251):NEXT
224 PRINT"[home][down, 3 time
    s]"SP$
229 RETURN
230 REM GET ANSWER
231 POKE198,0:AN$=""
232 GETA$:IFA$=CHR$(13)THEN237
233 IFA$=CHR$(20)ANDLEN(AN$)>0
    THENAN$=LEFT$(AN$,LEN(AN$)
    -1):GOTO236
234 IFA$<"A"ORA$>"Z"THEN23
    2
235 AN$=AN$+A$
236 PRINTLEFT$(D$,11)TAB(4)AN$
    "[sp]":GOTO232
237 IFAN$=""THEN232
238 RETURN
240 REM RIGHT
244 Q$="VERY[sp]GOOD!!"
249 RETURN
250 REM WRONG
252 PRINTLEFT$(D$,11)SP$
254 Q$="NO,[sp]"
256 WR=WR+1:WR$(WR)=W$
259 RETURN
260 REM ALL RIGHT
266 Q$="CONGRATULATIONS-[sp]Y
    OU[sp]GOT[sp]THEM[sp]ALL[s
    p]RIGHT!!!!"
267 PRINTLEFT$(D$,11)SP$LEFT$(
    D$,11);:GOSUB290:RETURN
270 REM REVIEW
272 PRINT"[clr]":Q$="OUT[sp
    ]OF[sp]TEN[sp]WORDS,[sp]YO
    U[sp]SPELLED"+STR$(10-WR)
    +"[sp]CORRECTLY."
273 GOSUB290
274 Q$="YOU[sp]SHOULD[sp]REVI
    EW[sp]THE[sp]FOLLOWING:":
    PRINTLEFT$(D$,4):GOSUB290:
    PRINT
275 FORZ=1TOWR:Q$=WR$(Z):GOSUB
    290:NEXT
279 RETURN
280 Q$="TOUCH[sp][rvs-on]RETU
    RN[rvs-off][sp]TO[sp]CONTI
    NUE.":GOSUB290
282 POKE198,0
284 GETA$:IFA$<>CHR$(13)THEN28
    4
286 RETURN
290 REM PRINT MESSAGES
291 CC=0:FORN=1TOLEN(Q$)
292 CC=CC+1:IFMID$(Q$,N,1)=CHR
    $(32)ANDCC>LL-10THENPRINT:
    CC=0:GOTO294
293 PRINTMID$(Q$,N,1);
294 NEXT:PRINT
299 RETURN
300 REM PICK SKILL LEVEL
302 PRINT"[clr]":Q$="WHICH[
    sp]LEVEL[sp]DO[sp]YOU[sp]W
    ANT?":GOSUB290:PRINT:PRIN
    T
303 PRINT"1.[sp]BEGINNER":PR
    INT"2.[sp]MEDIUM":PRINT"
    3.[sp]EXPERT"
304 GETA$:IFA$<"1"ORA$>"3"
    THEN304
305 POKE251,4-VAL(A$)
306 PRINTCHR$(147):RETURN
```


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New Products

PRACIFILE BRINGS POWERFUL DATA BASE MANAGEMENT CAPABILITIES TO COMMODORE 64

PractiFile, new from Computer Software Associates, is a powerful and versatile data base program designed for the Commodore 64. The program is compatible with CSA's PractiCalc 64 and PS spreadsheets and supports several word processing programs for file merging.

PractiFile is designed to help families, businesses, and educators handle dozens of tasks involving numbers or lists. Among the applications are inventory control, mailing lists, accounts receivable, teachers' grade books, tracking charge accounts or bank balances and printing mailing labels or statistical reports. The program also arranges and prints data for clear presentation in report form with titles and headings.

According to Sandy Ruby, Vice President of Research and Development of Micro Software International, the exclusive distributor of CSA products, "We're offering a data base program that's simple to learn, yet has all the speed and flexibility of expensive programs designed for large-scale business use.

Unlike some systems that can take up to a week to learn, PractiFile can be mastered in just a couple of hours."

There's plenty of room to enter data, too. Most data base programs for the Commodore machines have an extremely limited file capacity. PractiFile can handle over 1,000 mailing list records on 1541 disk drive. The batch entry mode permits fast entry of data. The program allows entry and printout of data in upper or lower case.

The user of PractiFile does not have to specify the number of characters for each field. Instead, fields are packed end to end to save space. Maximum record size is 254 characters.

Sorting is fast and flexible; it is possible to change a file from last-name order to zip-code order in less than one second. Nested sorts are a breeze too; if there are ten Smiths in a file, for example, they can be alphabetized by first name instantaneously. Nested sorts can be up to five fields deep.

PractiFile allows multiple lines per record. Multiple reports can be automatically generated each time the contents of one field changes. Columns can be calculated using arithmetic, log, and trig functions, and bar graphs can be generated to illustrate this numeric data. There is a manual that offers the user easy-to-follow instructions as well.

PractiFile is available at a suggested retail price of $55. For further information, contact Micro Software International, The Silk Mill, 44 Oak Street, Newton Upper Falls, MA 02164; telephone (617) 527-7510.

MAGNACOMP INTEGRATOR CONSOLE

Arkey/Magnacomp, of Gardena, California, introduces its new MAGNA COMP 64 INTEGRATOR CONSOLE for the Commodore 64. This innovative concept allows the standard Commodore 64 to be inserted into a larger, more substantial housing, which provides a means of mounting the monitor on top of the housing. Space is available internally to hide wires, expansions, 80 column card, and other ad-ons. Six AC surge/spike protected outlets, are set in metal casing inside to make AC hook-ups. The Manufacturer claims that the surge protection is more than 98% effective against accidental voltage related damage.

Most important new feature of the system is a hard wired NUMERIC DATA PAD, built right into the face of the keyboard next to the regular Commodore keys. 16 keys provide the conventional adding machine convenience, so necessary for hour by hour working with numbers. As it is hard-wired, no software need be run to put it on line. Hook-up is direct to the 20 pin connector inside the Commodore.

Although designed for all C-64 users, it is especially targeted toward the business and professional user. In a business setting, the maze of wires, cards & expansions, which characterize a fully set-up C-64, can be neatly tucked away. Unit is modestly priced at $149, suggested retail. A six page brochure is available from manufacturer, Arkey/Magnacomp, 1241-135th Street, Gardena, CA 90247. Customer Service at (213) 242-8598 will answer any questions.

SOFTWARE ENHANCEMENT PRODUCTS

A new 40 page catalog from ELECTRONIC SPECIALISTS presents numerous products designed to eliminate problems most often blamed on software. Protective Devices for smooth software performance include Equipment Isolators, AC Power Line Filter/Suppressors, AC Line Voltage Regulators and Modem Protectors.

Descriptive sections are included outlining particular software problems and sug-

gested solutions. Typical applications are highlighted. Request catalog 831.

Electronic Specialists, Inc.,
171 South Main Street
Natick, Massachusetts 01760
Phone: (800) 225-4876

NEW SOFTWARE TURNS COMMODORE 64 INTO A MUSIC SYNTHESIZER FOR HOME AND STAGE

A software package designed to transform the Commodore 64 into a musical instrument that anyone from an inexperienced child to a professional musician can play has been introduced by Waveform Corporation.

Called MusiCalc 1, the program allows users to play with pre-programmed melodies for later playback. Users can compose and perform in styles ranging from classical to new wave to Japanese to Latin and African.

The program turns the Commodore 64 into a professional-caliber, three voice synthesizer with fully interactive real-time sequencing, slide controls, modulators and transposers. Users can hear their creations by attaching their microcomputer to a television set, stereo system or professional-grade amplifier, using standard RCA patch cords.

MusiCalc 1 is the first member of an interactive software product family which Waveform will introduce over the next several months. Other products include a scorewriter and keyboard.

Contact: Waveform, Inc., 1912 Bonita Way, Berkeley, CA 94704.
(415) 841-9866.

INTRODUCING 64 DOCTOR A DIAGNOSTIC PROGRAM FOR THE COMMODORE 64

It's a scenario familiar to every computer user. You're zipping along on the keyboard . . . you try to store a file onto disk when—zap—the disk drive starts grinding away uncontrollably and you know it's your disk . . . or your disk drive . . . or a cable . . . or . . . frantic search for user's manual.

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BEYOND BASIC

COMAL Users Group (USA) has announced the immediate availability of the language for the Commodore 64 designed to replace BASIC. COMAL includes 40 graphics statements and commands, 11 sprite statements, and turtle graphics. It includes a RUN-TIME COMPILER which explains why it is so much faster than BASIC. String searches are actually over 79 times faster, and typical program execution should be about 6 times faster.

The total cost for this new, well designed, powerful language is only $19.95, less than you might expect to pay just for a few "patches" to BASIC.

Order the COMAL System Disk from the COMAL Users Group, 5501 Groveland Terrace, Madison, WI 53716, or send a SASE for more information.

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MenuWrite is priced at $29.95 and is available for the C-64 and other computers. For more information on MenuWriter and other Dynatech programs, contact Dynatech MicroSoftware, Inc., 7847 N. Caldwell Ave., Niles IL 60648, or call toll-free 1-800-621-4109. In Illinois, call (312) 470-0700.

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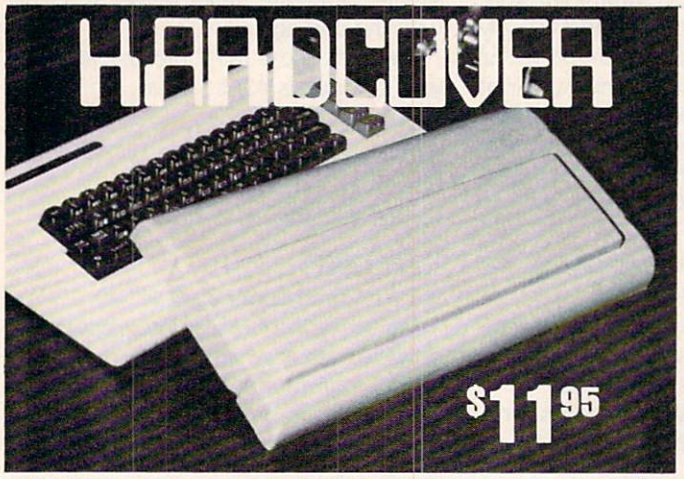

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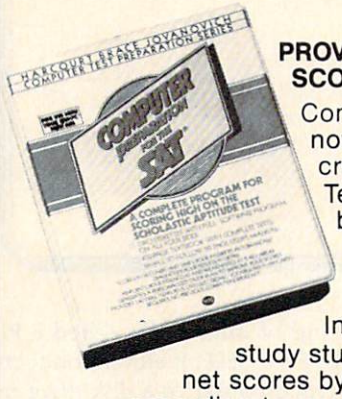

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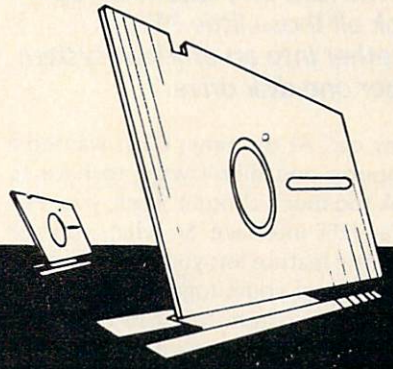

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Circle No. 144

Networking Your Pets

(& C-64) at School

By Walter Herrala, PH.D.

Unlike Mary's lamb in the well-known nursery rhyme, modern-day PETs (as well as C-64s and VIC-20s) are accepted and proliferating in schools across the country. When the number of computers in a single school grows beyond one or two, a technique called "networking" can be used to increase the efficiency of the entire system. In this article, an experienced school principal explains, in non-technical language, exactly how to set up a network with your existing PET hardware, as well as properly-configured C-64s.

School administrators are wise to get into computers from a position of strength as they try to master micros and their myriad peripherals. In addition to marshalling all of their leadership, organizational and public relations skills, this also means understanding the various ways in which the equipment can be set up, such as in a "network" system.

I will assume that most readers are as ignorant as I was when I bought my first machine. I do recall that someone did say it had an IEEE interface, but they may as well have whispered Einstein's theory

"The IEEE interface lets you hook all those little PETS together into an efficient system under one disk drive."

in my ear. At the time, I just wanted a computer and didn't want to have to think too much about it. Well, *your* PET has an IEEE interface. So what, you say! This little feature lets you hook all those little PETs of yours together and make an efficient system that can be driven (loaded) with a disk drive. Other kinds of computers can be networked, but none as cheaply as those using the IEEE interface. I will focus on PETs because my audience, which I hope includes school administrators, will do some nice things for students with this information. I'm also sure that thousands of you have PETs and may not know that they can be networked.

The IEEE interface permits you to connect the PET to peripheral devices, like printers and disk drives, but it also permits you to connect the PETs to each other as well as to the C-64, using an IEEE transparent interface made especially to plug into one of its ports (or outlet plugs). The great thing about this network is that you don't have to know *how* it works—just that it works. Many of you probably didn't even know you had purchased this interfacing capacity when you bought your PET. You only need to learn the rules of the network game and the procedure for setting it up.

A NETWORK PRIMER

So what is a network system? I'll assume you have about ten 32K PETs. Actually we have had three versions of the PET in our system at one time, but it's easier if they are all the same because then you only need one set of instructions. Any number of computers can be linked together to access a single disk drive, in this case a 4040. How is this done?

Interfaces, or interface cables, create a communication system between devices. They put the devices "face to face" so they can talk to each other. If there is no IEEE interface, devices cannot communicate. There are two kinds of cables which cost around $30. Hooking ten PETs together with a printer, disk drive, and maybe a new C-64 will cost under $400—that's cheap!

One kind of interface is called a PI, meaning PET to IEEE. It either connects your microcomputer to a disk drive or to the network. On the back of your PET there are three possible places to connect things. You will never make a mistake in connecting PI if you line up the slots. (I know a poor soul who forced one on even though it didn't fit!) One end is flatter than the other. The flatter end goes into the port closest to the center of the PET.

An Itol cable is an IEEE to IEEE connector. An Itol cable can do three things: a) connect a printer to a disk drive, b) connect PI cables to a disk drive, c) connect to each other to give you extension away from your disk drive. These simple cables, especially those longer than three feet, can be difficult to find, but check through your dealer contacts and magazine ads. Short Itol cables can be used if you don't mind having eleven devices in a pile, but I prefer mine in facing study carrels so my charges don't annoy each other. I also want my disk drive and printer at one end because all the disks, paper, etc. require a separate table.

PUT TAB A INTO SLOT B . . .

This is how to proceed. First connect the printer to the disk drive with a short Itol cable. Screw it down, but not too tight! Piggyback the two six-foot Itol cables on top of the one you've just connected. If you have to go further than six feet, put either a three-foot or six-foot Itol at the ends of the six footers. All of the PETs can be connected to a) the furthest reaches of your Itol's, b) at any place you connected Itols together, or c) add them on in the back of my 4040. The amazing thing about the disk drive is that it can keep track of any

configuration with no problem. It does this by continuously polling what is interfaced with it. It doesn't know where those devices are; just that they are there. It can receive and send disk messages according to its own operating system—a disk operating system (DOS). Congratulations, you now have a networked disk-driven microcomputer system!

RUNNING SMOOTHLY

This network allows you to disk load (DLOAD) from each of your PETs. You can also disk save (DSAVE) to the disk as well as dump things out to the printer. Here's a caveat which illustrates the major limitation of this system. *Never try to access the disk drive from two terminals at the same time.* Likewise, *never try to dump to the printer from two terminals at the same time.* It's nearly impossible to control use of the printer with CAI that has automatic printouts. These practices cause the bus (main signal cable) to tie up, and part of your system will no longer load or respond to commands of other kinds. Think of the problem as a log jam at the confluence of two (or more) rivers. Turning off the hung-up terminals or terminals will clear up the mess, but if this problem gets too hairy—and remember, there are ten eager kids clamoring for action—start with the disk drive, turn off all the elements, and start from scratch. Your aides will get magnificently proficient at this odd skill and they will mercilessly train all of their users not to hang up the bus.

Ideally, each person to gain access should have some token that is placed on the using terminal and returned to the disk drive when finished. We use a plastic play dog. But even in our professional inservices, at times we've overloaded the bus. Although this happens, it's really a minor problem. When we are doing CAI and don't want to stop all operations and clear a hung-up terminal, we load that terminal with a cassette drive and clear the suspected offender when we get a break between classes. The entire system is not hung up each time there is a problem with the bus. It's easy to keep on operating the other nine, but it helps to keep backups of your most popular CAI materials on tape. This is particularly important if the program the students are using on the other nine terminals is keeping a running score. Kids want to keep working but also want that feedback on their student user folders. They won't forgive you for losing their cumulative scores just to clear a terminal.

I do not advocate using this networking system without adult supervision. In fact, it is best to have two supervisors at all times. It is true that computers have the potential to release teachers from the pain of drilling the students, but it is also true that CAI is even better when adults are around approving and helping. In fact, the computer often takes the place of the dreaded taskmaster and the adult can more easily be supportive and helpful.

If you decide to network, don't let anybody talk you out of your cassette drives. You will still need them for computers-for-loan, teacher inservices, individual classroom use, etc. If you are buying ten computers and a disk drive you may still want to get a couple of cassette drives in case your disk drive fails. It takes a little time, but you can still keep a computer center going by loading with the cassette drive and limiting the range of software used. Also, as a motivator you may want to assign a personal cassette to students for storing their programming projects or their word processing creations.

MY FRIEND, THE COMPUTER

Perhaps the finest feature of the new 32K PETs in a networked disk drive system is found in the extreme "user friendliness" of the disk operating system. Basic 4.0, which all of the new PETs have, matches up with the 4040 disk drive in such a way as to allow shortened commands for accessing the drive. So easy are these commands that even the uninitiated may easily master them. Basic 4.0 allows the user to load a helping program called "DOS Support." This is loaded from a disk in four seconds. I have a disk envelope fastened to the carrel wall near the drive. The shifted-run shortcut loads the first thing on the disk. There is nothing else on the disk so it can be loaded into all ten PETs using

"In providing drill, the computer often takes the place of a dreaded, human taskmaster, and the adult supervisor can more easily be supportive and helpful."

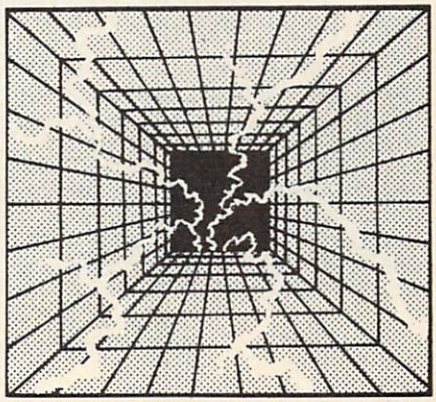
the shifted-run loading shortcut. Since DOS support is the only thing on the disk, naturally it's the first. The aide just keeps the drive humming until all the computers are loaded with DOS Support. Once loaded, DOS Support stays operational until the PET is turned off. Now the volunteers do not have to do anything but hit the arrow-up key, type in the name of the program (without quotes), and hit return. The program will be found on either drive. It is no longer necessary to open channels, use quotes, or specify a drive. The use of DOS Support in loading programs makes loading so quick that the entire system can be turned off and reloaded in under four minutes. Great for when the building engineer turns off the electricity "for a minute."

If you are interested in networking, the compelling fact that you are using one disk drive and one printer instead of ten must be kept in mind when trying to master the mechanics of the network and its terminology. In my experience only implementation, and not arduous advanced study, created mastery for myself and the volunteers.

REACHING OUT

Obtaining helpful information should now be a survival skill for you. You will probably need to talk to your vendor as often as twice a day whenever you implement something new, like this network. Make it clear that you intend to call him until things are right. Demand that he understand that helping you operate is a condition of sale. This goes beyond just service. For example, give him this test: Ask him to come out and connect up your IEEE cables. If he balks, go somewhere else. You will undoubtedly be upgrading from here on, and each time you do so you will need to ask questions. I have been fortunate with my vendor, but have been appalled at how little assistance others have received for their good money. They became discouraged by the people who should have been helping them. Also, as coordinators of these programs, it is important to keep your operators and volunteers abreast of what you know.

Having a network with a disk drive is a major step forward in your ability to access programs, store data, and do printouts. Despite some minor drawbacks, it is well worth the effort and expense. In the last analysis the children will benefit from your initiative because the bottom line of a network, given monetary restraints, is increased computer access for children. It is for their sake that you will face this new challenge.



Bits & Pieces

The following suggestion for running the SLOT MACHINE (October 1983) was submitted by Paul B. Hulse.

"Listing 1 Slot Data" needs to be run first, on the disk that you want the entire program to reside on, for two reasons. First of all, Listing one rewrites itself if the checksums are correct in a form that cannot be duplicated unless you have a machine language monitor. Secondly, Listing 2, "Slot-Boot" will not load listing one automatically unless Listing 1 has been previously run.

This listing for a screen dump using the Prowriter printer was omitted from the February 1984 issued of *COMMANDER*.

```
 10 PRINT ''[clr]'';
 20 GET A$:PRINT ''[rvs-on][sp][left][rvs-of
    f]'';:IF A$="" THEN 20
 30 IF A$=CHR$(133) THEN PRINT ''[sp]'';:GOT
    O 100
 40 PRINT A$;:GOTO 20
100 POKE 56334,PEEK(56334) AND 254:POKE 1,PE
    EK(1) AND 251
110 FOR I=0 TO 127:FOR J=0 TO 7:POKE 32768+I
    *8+J,PEEK(53248+I*8+J):NEXT J:NEXT I
120 POKE 1,PEEK(1) OR 4:POKE 56334,PEEK(5633
    4) OR 1
130 POKE 55,255:POKE 56,127
140 DIM B(63):DIM V(39,7):S=0:OPEN 4,4,4
150 PRINT#4,CHR$(27);CHR$(84);''16''
170 FOR CL=1024 TO 2023:C=PEEK(CL)
180 L=(C*8)+32768
190 FOR X=0 TO 7:H(X)=PEEK(L+X):NEXT X
200 FOR Z=0 TO 63:B(Z)=0:NEXT
210 N=1:Q=0:FORX=0 TO 7:M=128:FOR Y=0 TO 7
220 IF H(X)=>M THEN B(Y+Q)=N:H(X)=H(X)-M
230 M=M/2:NEXT Y:Q=Q+8:N=N*2:NEXT X
240 FOR Y=0 TO 7
250 V(S,Y)=B(0+Y)+B(8+Y)+B(16+Y)+B(24+Y)+B(3
    2+Y)+B(40+Y)+B(48+Y)+B(56+Y)
260 NEXT Y:S=S+1
270 IF S<40 THEN 320
280 PRINT#4,CHR$(27);CHR$(83);''0320''
290 FOR S=0 TO 39:FOR Y=0 TO 7:PRINT#4,CHR$(
    V(S,Y));:NEXT Y:NEXT S:S=0
300 CLOSE 4,4,4:OPEN 4,4:PRINT#4,CHR$(13);:C
    LOSE 4,4:OPEN 4,4,4
320 NEXT CL:CLOSE 4,4
```

We would like to thank Start Computing, Tacoma, WA for hardware used in preparation of this listing.

TORONTO USERS GROUP CONFERENCE

The third annual TPUG (Toronto Pet User's Group) conference will be held in Toronto in May. The Club is one of the largest independent Commodore users' group, with a growing membership of over 12,000.

Event:	TPUG Conference (Toronto Pet User's Group
Date:	Saturday, May 26, 1984 Sunday, May 27, 1984
Time:	10:00 AM to 5:00 PM both days
Location:	Constellation Hotel, 900 Dixon Road (adjacent to airport) Toronto, Ontario
Activities:	Full two-day program of speakers covering topics for beginners and experts. Club library (5000+ programs) at special conference price of $4.00 per disk. Exhibitors of hardware, software, accessories "Answer Room"—free 10 minute consultation. Trader's corner for used equipment.
Cost:	Pre-registration (before April 15) including one year's Associate membership $40.00
Information:	Chris Bennett, TPUG Business Office, 1912A Avenue Road, Toronto, Ontario M5M 4A1, (416) 782-9252

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BITS AND PIECES

Have you ever typed, loaded and RUN a game, only to find the joysticks inoperable? Everything seems correct in the listing, but they still won't work. Try this new line: 100 SYS 65017. Save the programs again, reload, and RUN.

Submitted by
Raymond T. Schreiner Jr.

Letters

To the Editor,

As the new owner of a C-64, I am amazed at the software and hardware available on the market. If possible, I would buy it all! That brings me to question the possibility of a group of Commodore users buying one commercially produced software disk, and each person making a copy for their own use. What is the best method for this practice?

MCR
Dallas, Tx.

Dear MCR,

Reproducing commercial software is an illegal practice. Copyright laws protect the author and the manufacturer from the 'theft' of their work. Programmers spend many hours creating the user-friendly, error free software available to the public. Manufacturers spend vast amounts of money to produce and advertise their products. It is unlawful to duplicate software without the express permission of the manufacturer. It is the policy of *COMMANDER* Magazine to uphold copyright laws.

The Editor

To the Editor,

I own a Commodore 64. I've been subscribing to *COMMANDER* and find it an excellent magazine.

My favorite articles have been the series: INTRODUCTION TO ASSEMBLY LANGUAGE PROGRAMMING by Eric Giguere. Please continue this series. I've read books and other magazine articles on the subject and find them confusing or poorly written. I'm missing Parts II and III. Can I get a copy of them as I want to have the complete set of articles? This set of articles will become my reference manual on assembly language programming.

Also, I'd like to see future articles in this series on the routines in the Kernal and in Basic.

P.B.
Pacific Grove, Ca.

Dear P.B.

This month *COMMANDER* has included an index of the articles, programs and reviews published from December 1982 through December 1983/January 1984. We hope this index will help you determine which back issues you need to complete the Introduction to Assembly Language Programming series. Back issue ordering information is included in the REMS to READERS section.

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★ 16,705 Gary Raftery, Atlanta, Ga.

Space Sentinel *from T & F Software*
★ 36,110 Lake Davidson, Anaheim, Ca.
★ 27,460 Eric Wolff, Boise, Id.

Pooyan *from Datasoft*
★ 575 Cathy Haley, Boston, Ma.
★ 560 Jon Stoneberg, Houston, Tx.

Serpentine *from Creative Software*
★ 10,000 Marshall Smith, Eerie, Pa.
★ 8,500 Kevin Clough, Norfolk, Va.

Choplifter *from Creative Software*
★ 6,405 Mark Petersen, Salem, Or.
★ 5,200 Paul DeLorenzie, Newark, NJ

Shamus *from Synapse*
★ 310 Brenda Carson, Baltimore, Md.
★ 295 Thomas Brakken, Las Vegas, Nv.

Blue Max *from Synapse*
★ 5,615 Terry Young, Richland, Wa.
★ 5,410 Brad Hinman, Omaha, Ne.

Riverchase *from Cyberia*
★ 2,300 John Moody, San Jose, Ca.
★ 980 Gene Reynolds, Shreveport, La.

Frogger *from Parker Brothers*
★ 5,600 Roger Chase, Great Neck, NY
★ 4,215 Becky Ricci, Sacramento, Ca.

Stix *from Skyles Electric Works*
★ 6,990 Richard Orona, Ukiah, Ca.
★ 6,890 Gerald Choo, Alberta, Canada

Knights of the Desert *from Strategic Simulations*
★ 3,680 Peter Lo, Salt Lake City, Ut.
★ 3,570 Burton Geiger, South Bend, In.

Telengard *from Avalon Hill*
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★ 4,263,145,830 Jeffrey Wilson, Champaign, Il.

All entries must be received by the first of the month to be eligible for the following month.

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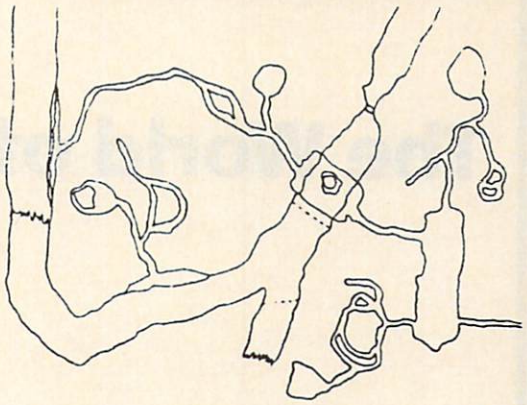

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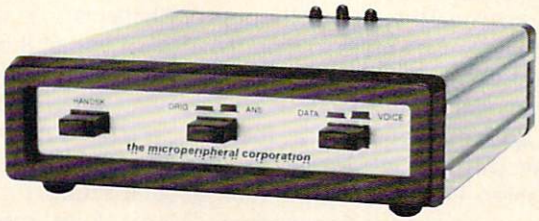

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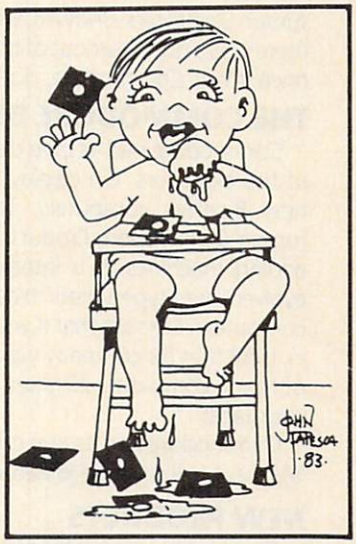

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Circle No. 55

The World of Commodore Show

by Eric Giguere

1983 was the 25th anniversary of Commodore Business Machines. From its humble beginnings as a typewriter repair shop in 1958, Commodore has emerged as a leading manufacturer of personal computers. As they enter their 26th year of business, the future looks even brighter. Commodore held the **World of Commodore Show** in Toronto, Ontario, last December 8-11 to celebrate its quarter century of existence and it was a success. The following is my report on the show.

THE SHOW

For those of you that have never been to a computer fair, show or exhibition (this was my first), simply visualize a large trade-show concentrated totally on computers and you have an accurate description. The World of Commodore exhibition was such a show, dealing only with Commodore computers. Although it cannot compare with the more generalized Consumer Electronics Show (CES) or the COMDEX exhibitions, there was a good turnout of both exhibitors and the public. For once it was Commodore, not Apple or IBM, in the spotlight.

THE COMMODORE BOOTH

Commodore had its own display area separate from the rest of the exhibitors. On display were several VICs, 64s and the new **B-series** computers. They were also showing some former Commodore Products in one corner—calculators and adding machines. It is interesting to see how Commodore evolved from typewriters to adding machines to calculators to computers. I'm sure that if you had told founder, Jack Tramiel, in 1958 that his company would be the leading manufacturer of home computers 25 years later, he would have laughed in your face!

Commodore had its one millionth VIC-20 on display as well. Maybe it will soon be joined by a millionth 64?

NEW PRODUCTS

That heading is slightly misleading. Commodore did not announce any new products at the fair, much to my disappointment. One Commodore official said they were saving all their new stuff (if any?) for the Winter CES. I can see the logic behind this attitude, as media coverage is more extended at the CES, but it would have been nice to see Commodore introduce one new product at the exhibition, especially since they originated in Canada. We'll simply have to wait to see what's coming from Commodore.

Even though nothing new was announced, several "already-announced-but-not-quite-up-to-production" products were on display. I already mentioned the B-series computers. These will be available in the first quarter of 1984, so they should be in the stores by the time you read this. Several **Executive 64s** (also known as the SX-64), portable versions of the 64 with one disk drive and a color monitor, were also shown. I was impressed by them and perhaps will get one sometime in the future (it's a neat way to upstage Apple and IBM users).

Getting back to the serious side of things, two of the newer printers—the MPS 801 and the MCS 801—were hooked up to several of the 64s. The MPS 801 is the replacement for the 1525 printer. Apart from being smaller and quieter, the MPS 801 is basically the same as the 1525. MPS stands for Matrix Printer (Serial) and 801 means 80 columns, version 1. The MCS 801 is Commodore's new 8-color printer. For the MCS 801 the 'C' stands for Color printer.

I asked about the 1526 printer and heard it was on temporary hold until they can get the bugs out. It seems to be a decent printer, much more so than the 1525. It has an 8 by 8 matrix and offers bidirectional printing in 80, 40 or 20 columns.

Commodore is apparently coming out with a new double sided, double density disk drive for the VIC and 64. Outwardly, it resembles a 1541 except for a different disk release mechanism. Perhaps we'll hear more about it at CES.

Also on display was Commodore's **'Magic Voice'** speech synthesis module for the 64. Plug it into the cartridge port and you can make your 64 talk back to you (how about "Syntax error, stupid!") Some cartridge games can also use the speech capability when plugged into the Magic Voice. Currently, only Gorf and Wizard of Wor have this capability, but more are in the planning stages.

COMMODORE SOFTWARE

Most of the computers on display were showing off Commodore software. **Simon's BASIC** and **LOGO** were on display, as well as some educational programs. In the corner, lo and behold, was a Commodore 64 with a **KoalaPad** touch tablet, running the **Koala Printer** program that comes with the tablet (a fantastic program). This surprised me, since the KoalaPad is not a Commodore Product.

The most interesting software tidbit was Commodore's giving away a version of **COMAL,** a popular European computer language for the 64 (a mixture of BASIC and PASCAL). The version on diskette is upwardly compatible with Commodore's cartridge version of COMAL, soon to be released. Next month your fearless scribe will have a review of COMAL in *COMMANDER* to tell you more about it.

Commodore had some games on display as well. Apart from the previously mentioned Gorf and Wizard of Wor, the newest game was **Solar Fox,** a licensed version of the Bally/Midway arcade game. It looks very good and has the distinction of being the first Commodore game programmed entirely by two women—Judy Breddick (game programming) and Candy Marten (sound effects). Turning to sports, Commodore's **International Soccer** attracted attention. The graphics on the game are the best I've seen yet. I hope Commodore will come out with other sports games of the same quality.

THE EXHIBITORS

There were exhibitors from everywhere it seemed. Canadian companies were prominent, but there were a lot of Americans, as well as some from England, France and Turkey. Everybody from manufacturers to local retailers were represented. Even Ma Bell was there with a display on computer telecommunications.

ATTENDANCE

The public attendance at the fair was very good. The first two days were a bit slow, but with the weekend, came the crowds. I found it hard to move around very quickly with all the people around.

SEMINARS

To go along with the show, there were several seminars on various aspects of computing, from the 'basics' to business computing. The most interesting was the 'Sound and Light Show', in which the public was shown the capabilities of the 64 for use in the art and music fields. They managed to hook up the 64 to a digital-to-analog converter and hear it play in six voices simultaneously! And then a series of pictures, called "The Commodore Art Show", was shown using the 64 (hooked up to a large screen). These pictures had been entered into the 64 through a method called digitization and touched up with a KoalaPad. The results were outstanding. (You may obtain a copy of the art show from the Toronto's Pet User's Group.)

COMMANDER's BOOTH

COMMANDER also had a booth at the fair, as you may have seen from looking through the December/January issue, and it did quite well. They sold out every single copy of *COMMANDER* they had on hand and signed up a lot of subscribers. I myself came out of my own interest and initiative. I enjoyed the fair, and I am sure any *COMMANDER* readers would have.

FINAL COMMENTS

My final analysis of the fair is that it was a success—both for the public and the exhibitors. Many of the exhibitors I talked to said they were doing good business and were making good contacts for distribution and such. I certainly enjoyed the show and hope to be able to attend something like this once more. I encourage you to go and take a look if anything like this occurs close to you.

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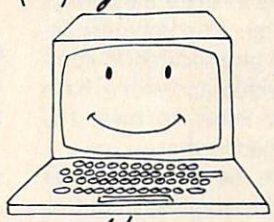

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News Releases

FISHER SCIENTIFIC COMPANY INSTALLS COMPUTER LABS IN 52 D.C. SCHOOLS

Fisher Scientific Company, Educational Materials Division, located in Chicago, Illinois, has installed fifty-two Comodore 64 Computer Laboratories in selected elementary, junior high, and senior high schools in the District of Columbia Public Schools. These laboratories will be used for teacher training and computer literacy instruction for students. Thirteen labs were in use this summer for a Summer Computer Camp Program.

Each laboratory consists of ten Commodore 64 computers and monitors which are networked to a common disk drive via the MUPET networking system that allows students to share a common disk drive and printer. All computers are individually housed and secured to computer furniture. Selected laboratories have been equipped by Fisher to meet the needs of handicapped learners.

The Commodore 64 microcomputer was recommended to the District of Columbia by Fisher because of its exceptional price/performance; multiple features such as standard keyboard, music synthesizer, and sprite graphics; flexibility within the educational environment; and broad base of software.

HARVARD TO COMPILE COMPUTER EDUCATION DIRECTORY

The Harvard Graduate School of Education will compile a directory of Microcomputer Applications in Educational Settings to be available by the fall of 1984.

The new educational technologies data base project will be done by members of the Gutman Library at the School of Education and funded by the Fund for the Improvement of Post Secondary Education in Washington.

According to Mary Grace Smith, project director, the directory aims at listing as comprehensively as possible all of the microcomputer programs that are currently in use in elementary, secondary, and post-secondary schools nationwide.

Data will be collected through inquiries to national magazines and journals, electronic bulletin boards, and by telephone calls to state departments of education. Printed questionnaires will be sent to all school systems in the United States to build as complete a directory as possible.

Smith asks that any one interested in being included in the directory, or desiring more information, get in touch with her at the Gutman Library, Appian Way, Cambridge, Massachusetts, 02138, (617) 495-9021.

CONFERENCE ON COMPUTERS FOR THE HANDICAPPED

Henderson, MN.–A national conference to examine the impact of microcomputer technology for the handicapped will be held in Minneapolis, MN September 13-16, 1984.

Titled "Computer Technology For The Handicapped," the conference will be held at the Raddision South Hotel. Sponsors are CLOSING THE GAP (an international newspaper covering microcomputer applications for the handicapped) and TAM (Technology and Media, forming as a devision of the Coucil For Exceptional Children) in cooperation with Dr. Gilbert Schiffman, Department of Education, Johns Hopkins University and Dr. William Buchanan, Applied Physics Laboratory, Johns Hopkins University.

The conference and its program will bring together special education, rehabilitation and medical professionals from around the world to share advances made by technology to aid the handicapped. In addition, this offering is designed to provide information to parents of handicapped children and disabled individuals, demonstrating the opportunities, advances and support this technology can bring to this population.

Over 80 presentations and three, three-hour workshops are available to all participants. In addition there are six pre-conference workshops featuring beginner to advanced training in the use of microcomputers for the handicapped.

A nationally-based commercial exhibit floor featuring the latest technology has to offer will also be a part of the conference and will also be available to the general public for a $3.00 admission fee.

Total cost of the conference is $150 is registration is received before September 1st or $175 for registration after that date. TAM and Group discounts are also available.

Additional information may be obtained from CLOSING THE GAP, P.O. Box 68, Henderson, MN (612) 665-6573 or Metro Mpls./St. Paul–341-8299.

SPOCK LIVES

Human Engineered Software announced the signing of Leonard Nimoy, the former star of Star Trek, "In Search Of. . .,"and numerous major motion pictures and Broadway plays, as corporate spokesman. The signing, announced at the Winter Consumer Electronics Show, calls for Nimoy to appear in a number of print, television and radio advertisements for HES, and innovative developer and marketer for software and peripherals for the home/personal computer market.

Headquartered in Brisbane, Calif., Human Engineered Software is the largest third party supplier of software and peripherals for Commodore home computers. The company markets cartridge- and disk-based utility, entertainment, education, productivity and business software under the HesWare™ brand name.

TWO EXCITING NEW PRODUCTS FOR THE COMMODORE-64

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The RAMDISK-64 is 64 kbytes of RAM used to emulate a disk drive. Use the RAMDISK-64 for extremely fast program loads and saves. Use it as a second disk drive. Or use the 64 kbytes as extra memory for storing spreadsheets, text pages, and graphics screens without using any of Commodore's RAM space.

The RAMDISK-64 cartridge plugs into the Commodore expansion slot or into a motherboard. An extender board is required if you are not using a motherboard. The RAMDISK-64 comes with software drivers on disk.

Make computing more fun. Order your RAMDISK-64 today for only $149.00!

VIDEO-80

The VIDEO-80 is a high quality cartridge that doubles your view to 80 columns. Now you can be serious about word processing and programming for an affordable price.

The VIDEO-80 does not affect the normal video output. With the VIDEO-80 you can have two screen displays: use the VIDEO-80 display for text output and the normal display for graphics output.

The VIDEO-80 cartridge plugs into the Commodore expansion slot or into a motherboard. An extender board is required if you are not using a motherboard. VIDEO-80 comes with software drivers on disk and a video cable.

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HOW TO TYPE IN BASIC PROGRAMS FROM *COMMANDER* MAGAZINE

As you probably know, your computer has a limited vocabulary and responds to BASIC language instructions in an extremely literal way. Programs listed in *COMMANDER* are carefully pretested, and should run as intended on your computer if they are copied properly. The following guidelines should help to clarify some important points about entering programs through the keyboard.

WRAP AROUND

Every "line" in a BASIC program begins with a line number and ends when you press the [RETURN] key. If a line in the program contains more characters and spaces than can fit on the width of your screen, just keep typing and the computer will automatically continue on the next row of the screen. You should press [RETURN] *only once* before starting the next line number. A 40-column C-64 or PET will "wrap-around" a program line for no more than 2 screen rows, with a maximum of 80 characters per program line. The 22 column VIC-20 can wrap around up to 4 rows (88 characters) in a program line.

SPACES

In a BASIC statement, spaces are usually ignored by the computer but may be added by programmers to increase readability. However, when the "quote mode" is in effect (see below), spaces do count. Unless you have good reason to do otherwise, it is probably safest to type spaces as they appear in our listing. Please note, however, that wrap-around lines will *not* be indented on your screen the way they appear in our published listing.

PUNCTUATION

Pay careful attention to punctuation symbols. You may not think there's much difference between a colon and a semicolon, but the computer certainly does. All commas, parentheses, and other special characters should be faithfully copied.

PLEASE NOTE: For technical reasons, quotation marks are listed as a double apostrophe. When you see that, press [Shift-2] for the quotation mark symbol.

ONES AND ZEROS

Among the most common errors of beginners (and even experts) is confusing the numbers 1 and Ø with the letters I, L, and O. You may have learned to type a lower case L for 1 on a typewriter, but most computers will not allow it. In our listings, pay close attention to the shape differences between the numbers 1 and Ø and the similar letters, I and 0.

SAVE IT WHEN YOU CAN

It is wise to SAVE a program on tape or disk before running it. That way, if the computer "locks up" or becomes inoperative because of an error, you won't have to re-type everything. For a very long program, it is advisable to save what you have entered after every 20 or 30 minutes of typing.

THE "QUOTE MODE"

Most Commodore computers incorporate an extremely useful, though tricky, feature called the Quote Mode. This allows you to program screen control functions, including cursor movement and character color changes, within a PRINT statement. Quote Mode is turned on whenever the quotation mark key [shift-2] is pressed. It is turned off when the quotation mark key is pressed again, or when the [RETURN] key is pressed. Quote mode is also in effect whenever the insert (INST) function is used.

When the quote mode is *on*, any time you press either a cursor control key, a color control key (such as [ctrl-wht]), or a reverse control key, you will see an inversed graphic character appear on your screen. These characters have no obvious meaning by themselves except as indicators that certain control functions have been inserted in the program. These inverse graphic characters also appear in normal, hard-copy (paper) listings of a program, but are nearly impossible to interpret in that form.

THE *COMMANDER* "QUOTE MODE" LISTING FORMAT

To make your task as easy as possible, *COMMANDER* has adopted a unique format for all control and graphic characters, as well as spaces, that occur between quotation marks. In our listing, each special character is represented by an abbreviation that appears between a pair of square brackets. For example, [down] means to press the cursor-down key once. The abbreviation [com-G] means to hold down the Commodore logo key (at the far lower right of the keyboard) while pressing G. When you see [shf-W], hold the shift key and press W. The space bar is indicated by the symbol [sp]. When the same special key is to be pressed more than once, the number of repeats will be shown between the brackets, for example, [right, 8 times].

Here is a list of the most common special key abbreviations:

Abbreviation	Key(s) to Press
[blk]	CTRL & 1
[wht]	CTRL & 2
[red]	CTRL & 3
[cyn]	CTRL & 4
[pur]	CTRL & 5
[grn]	CTRL & 6
[blu]	CTRL & 7
[yel]	CTRL & 8
[rvs-on]	CTRL & 9
[rvs-off]	CTRL & Ø
[clr]	SHIFT & CLR/Home
[home]	CLR/HOME
[inst]	SHIFT & INST/DEL
[down]	CRSR ↓
[up]	SHIFT & CRSR ↓
[right]	CRSR →
[left]	SHIFT & CRSR →
[shf-X]	SHIFT & X(or any key indicated)
[com-X]	Commodore (lower right key) & X (or any key indicated)

Continued from page 76

EVERGREEN IMAGES RELEASES SOLITAIRE SIMULATION

Evergreen Images has announced the release of Microtaire, an animated Solitaire game for the Commodore VIC-20. Microtaire is a faithful reproduction of the traditional Solitaire card game, including pleasant, lifelike sound effects, and the familiar appearance of the original. The cards are moved with easy to remember, single-keystroke commands and the set of rules used is one of the most popular. It is a welcome change of pace from the typical action game where patterns of play inevitably emerge–every game of Microtaire is unique!

Microtaire requires no expansion memory or other special cartridges. It is available on both cassette ($12.95) and disk ($15.95) postage paid from: Evergreen Images, Box 622, Kenmore, WA 98028.

CASINO GAMES FOR THE C-64

Advanced Microware has introduced two new software products for the Commodore 64. CASINO PAC includes four games–Blackjack, Poker, Keno, and Slot Machine. Each is an accurate simulation of the new video gaming machines being used in Las Vegas, Reno, & Atlantic City. The card games use realistic looking cards and all have excellent graphics. Practice your betting strategy, try your systems, or just play for fun–they are educational and entertaining. Available on tape or disk for $39.

64TOUR is a tour of the features and capabilities of the Commodore 64 with demos of all the graphics modes as well as music and sound effects. Only $12.

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THE MICROCOMPUTING OVERSEER

The MICROINDEX journal is a comprehensive index to microcomputing-oriented periodicals. It is a serious effort to organize the vast amount of information about microcomputing. It is intended to be user-friendly and for all ages, disciplines, and levels of knowledgeability.

Article data includes title, author, page, length, journal, issue, reader level, and rating. Article types include all features, articles, product reviews and announcements, and significant letters and notes. Tabulation is for easy referencing in levels by microcomputer model and a multitude of general and specific topics such as elementary education and accounting. *It is designed to be a primary reference to the current and constant flood of microcomputing literature.*

For further information contact Serious Personal Computing, P.O. Box 7059, South Nashau, N.H. 03060; (603) 888-1376.

BOOK OF FUN AND GAMES FOR THE C-64

Osborne/McGraw-Hill announces the release of *Commodore 64™ Fun and Games,* a collection of games and puzzles for the C-64. Readers can easily key in the computer code and play a large selection of games that utilize the colorful graphics and special sound capbilities of the C-64. Instructions and complete BASIC program lisings accompany each game. Priced at $11.95, the 182 page book offers 35 programs. Contact: Osborne/McGraw-Hill, 2600 Tenth Street, Berkeley, CA 94710. (415) 548l-2805.

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Circle No. 170

264 Preview

By Colin Thompson

Commodore previewed their next generation of personal computers at the Consumer Electronics Show early in January. The new machine, dubbed the "264", was the vanguard of several important Commodore announcements. To accompany the 264 a new line of peripherals and software was also unveiled.

The announcement of the 264 seems to solidify rumors of a major policy shift within Commodore. In the past, the company only marketed software products that were produced by an in-house development group. This policy now seems to be reversed, with Commodore actively seeking an outside software development for the new 264. The programs will be marketed in three forms: On disk, on cartridge or built into the 264 on ROM.

The last option marks a significant departure from the normal software distribution practices of the industry. The 264 is the first home computer to have built-in applications software. When the 264 is released in April, you will be able to select the kind of software programs you will be using most, and have them available in the computer's ROM. For example, if you are going to use the 264 primarily as a wordprocessor, you could choose a 264 with either Word Manager or SuperScript264 built into the machine. When the computer is turned on, the first thing you see on the screen is a wordprocessor.

Other built-in software options include "264 3-Plus-1", an integrated package complete with wordprocessor, spreadsheet and database. Many other combinations have been announced, but Commodore doesn't seem to have the final configurations settled at this time. Sources close to Commodore feel that all of the new software will be available either on ROM, on disk or in cartridge form. This would mean you could buy the 264 with Word Manager/Plan Manager built in, and also have Magic Desk on disk, or any other combination. This would seem to be a logical way to select the software/hardware combination that best conforms to your needs.

The 264 seems to be stepping away from the C-64's roll of 'home entertainment'. Commodore is stressing the business and home management facit of owning a personal computer. This concept was defined by Commodore Software President Sig Hartman. At CES Mr. Hartman said, "The key area we're emphasizing in software for the 264 is productivity, covering such areas as household management, word processing, calculation, business accounting, and education.

"The Commodore 264 is the first personal computer to offer a *selection* of productivity software built into the machine." He went on to explain, "Commodore is putting more 'software on silicon' than any other company. We're definitely putting more software on cartridge because cartridge programs give the user more workspace inside the computer."

Commodore has not dropped the VIC-20 from its line of computers, as some expected. An informal poll of three Los Angeles area mass merchants reveals the VIC to be selling in equal quantities with the C-64. The reason offered by each of the merchants is the VIC's $80 price tag. Many people entering the world of home computing simply are not prepared to spend more than $100 to see if home computing agrees with them.

Commodore's decision to continue with the VIC-20 may signal their intent to completely dominate the low end home computer market. It seems they are not willing to surrender the under-$100 market to Timex or any other competitor. In 1983 Commodore sold one billion dollars worth of home computers. The entry of the new 264 into the personal computer fray seems to be Commodore's way to insure another year of sales leadership.

INSIDE THE 264

The C-64 is not a Big VIC, and the 264 is not a Big C-64. Electronically, the three computers are only distant relatives. The 264 is physically different also. It does not share the same keyboard housing that the VIC and C-64 used. Instead, the 264 has a sleek new design, molded in black plastic, with an improved keyboard. The keyboard looks, at first glance, to be a modified version of the Executive 64's. The most noticeable difference is the addition of four separate cursor direction keys, each shaped like an arrow, pointing to the four corners of the compass. Four function keys are placed above the top row of the keyboard.

A closer examination of the keyboard reveals the absence of the familiar "restore" key. In its place is a second "control" key. The "up arrow" key has been moved to the "shifted Ø" position. The computer is three inches narrower (from side to side) than the C-64.

In the month prior to its announcement, many Commodore watchers speculated the new machine would sport a 16 bit microprocessor with a UNIX-like operating system. This proved to be wishful thinking. The 264 uses an 8 bit microprocessor, an HMOS 7501. Commodore rates the 7501's clock speed as ".89 to 1.76 MHz."This variable speed

clock is something new for Commodore computers and is thought to be an effective way to speed up processing time during the screen refresh cycle. The microprocessor is a direct descendant of the 6500 family. Other unusual features are flashing characters and 128 different colors (derived from the standard 16 color palette, multiplied by eight different luminance levels, ala Atari).

BASIC 3.5 is a standard feature. The new BASIC version adds some commands that enable the computer to display either text, hi-res graphics or split screen text/hi-res graphics. Graphic resolution is the same as the C-64: 320 × 200 pixels. The text is displayed as 25 lines of 40 columns, also the same as the C-64. BASIC 3.5 will include some of the commands that Commodore "left out" of the earlier V2.0 such as programming aids, PRINT USING, text windowing and sound. A machine language monitor is built into the operating system.

The new system's internal architecture differs radically from earlier Commodore designs. The eight bit microprocessor controls several blocks of RAM or ROM through a technique called "bank selected memory." This allows the 264 to configure itself differently, depending on the application required. 32K of system RAM is always present to control the operation of the computer. Another 32K of RAM is available for BASIC programming, but this figure is increased to 60K if needed by switching in more RAM. The extra RAM is bank selected by the system automatically. No user intervention is needed. If a built-in applications program is selected, the system switches in up to 48K of ROM to do the work. Cartridge based ROM programs are handled in the same way.

The bank select feature was first used by Commodore on their never-released model 128. The ability to bank select up to 60K of RAM means that BASIC programs may be much larger than ever before. It also means that more data, such as pages of letters, may be held in memory at once.

The sound capabilities of the 264 have been reduced from those of the C-64. Only 2 tone generators, without the envelope and filtering abilities of the SID chip, are available. Sprites will not be supported by the 264. The loss of sprites seems to reinforce Commodore's plans to sell the 264 as a "working" computer, not another game machine.

NEW PERIPHERALS

Commodore has finally addressed the problem of the "slow" disk drive. In the past, their standard disk drive, the 1541, has always been considered slow by industry standards. The 1541 uses a serial interface that transfers data one bit at a time, unlike most other systems that incorporate a parallel—8 bits at once—interface. A new parallel disk drive, the SFS481, will handle off line data storage chores for the 264 about three times faster than a 1541. The 481, like the 1541, is single sided, single density and holds 170K of data. The new drive is not compatible with any other Commodore system; however, the 1541 may be used on the 264. Commodore also announced a 1542 disk drive, but the only difference between it and the 1541 is the color of the case–black, to match the system's color scheme.

Four new printers were announced to enhance the 264. The new letter quality printer, the DPS 1101, appears to be a Triumph-Adler device, functionally similar to the Brother HRS15/Dynax DX-15. The MCS 801 Color dot matrix printer (first previewed last year at NCC) looks like the popular IDS MicroPrism. A multi-color ribbon is used to achieve colored text and high resolution graphics. The MPS 802 high speed dot matrix printer and the 1520 plotter/printer round out the new printer offerings. Non-Commodore printers may be used by the 264 through the serial port.

The cassette tape transport, the C1531, is still available, but its connector plug has

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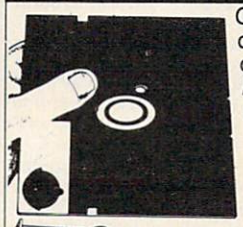

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been redesigned to make it compatible only with the 264. The user port (for modems) remains unchanged from the VIC/64, but a new 264 Modem will be available for the system. The 264 may be connected to a standard TV set, or to a color monitor. A version of the 1701/2 monitor was announced, but the only difference appears to be cosmetic–a newly styled black housing. A new Commodore joystick with two fire buttons completes the peripheral announcements.

SOFTWARE

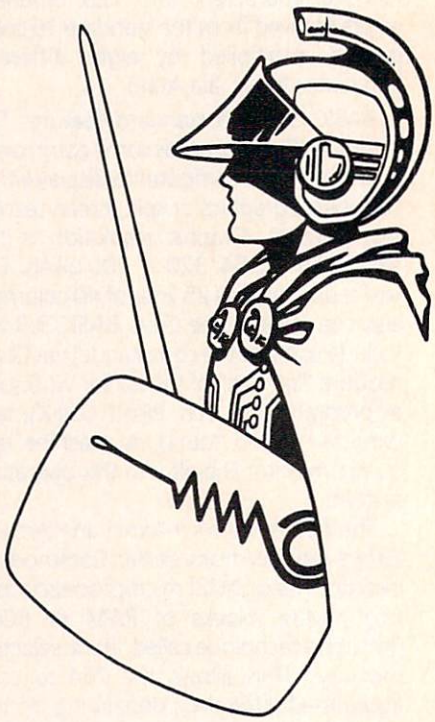
In the past, Commodore's software has never been on par with their excellent hardware. VIC and 64 owners have turned to third party software houses for useful software. In an effort to turn the tide, Commodore has sought out these very same software companies and purchased some of their best selling titles. A flood of Commodore labeled software will be available for the 264. When a certain product was not available, they commissioned the work from outside sources. It appears that every area of software interests have been covered. The primary thrust of 264 software applications is in the 'productivity' arena. This means the new 264 owner will be able to plug in his new computer, read a user manual and begin to use the computer immediately.

Some of the new programs include Easy Calc 64 and a graphics package called B-Graph. Educational programs from Milliken and EduKat will compliment the new Commodore Logo. The Micro Illustrator, by Island Graphics, should provide computer artists with an excellent tool for painting on the screen with a light pen or joystick. Home entertainment software such as Zork, The Micro Cookbook and various sports and arcade games will help launch the 264.

Commodore has not settled on the final retail price or actual release date for the 264, but it should be out by May, in the $400-$600 price range.

The second computer in the New Generation line of computers was shown at CES, but little is known about it. Its official designation is the CV364, and the only difference between it and the 264 seems to be the addition of 19 more keys on the right side of the keyboard and built in speech. The CV364's vocabulary is pegged at 250 words, selectable from BASIC. This seems to match a new speech cartridge they are releasing for the C-64.

One week after the 264 was announced, Commodore stunned the industry with resignation of Mr. Jack Tramiel, the firm's number two man. This may prove to be the final irony in the long rocky road Commodore has travelled to become the industries' sales leader. Tramiel, regarded as the driving force behind Commodore's climb to the top, will not be around to enjoy the fruits of his success.



VIC-20

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Written by a college professor in a friendly and informative style, the Blue Book gives you theory of operation, schematics, program listings, parts list, construction hints and sources of materials for each one of the 30 projects.

If you want to get the most out of your VIC this book is a must. Even if you don't plan to build any of the projects, the Blue Book is a valuable source of information on what can be done with the VIC.

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Computer Baseball, as its name implies, is a realistic baseball simulation game. It comes on disk for the C-64, and sells for about $40.00. At the start of the game, you are given a list of past and present World Series teams, from which you are asked to select two to pit against each other. This enables you to see how the 1936 Cardinals would fare against the 1980 Mets. The game also allows you to design your own teams, so you can "watch" your Hometown Heros in action with the Pros.

Your role is that of team manager. You control the offensive and defensive plays of your team as you try to outplay your opponent's manager, which is either another person or the computer. You can make such calls as intentional walks, steals, or bunts. If your pitcher is giving away hits, you can even make a trip to the pitcher's mound. About the only thing you cannot do is throw a Billy Martin-style temper tanturm. (However, one of your players can get ejected from the game for arguing with the Ump!)

The game does take a long time to play, thus it is not the type of game you play when you have a few free minutes.

Remember, though, that **real** baseball takes several hours to complete. In addressing this, S.S.I. provided a feature allowing you to save the present game to disk and then to retrieve it later. As a result, you can postpone the completion of the game temporarily "due to rain."

Computer Baseball is by far the most detailed and intricate sports simulation around. Those who only occasionally watch a baseball game may find the game boring, but I contend that Strategic Simulations has produced a true "hit"!

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BET YOU CAN'T PLAY JUST ONCE

Reviewed by Cheryl Peterson

"Neutral Zone"
ACCESS Software
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This is another of Access Software's great graphics and sound games for the C-64. If you try to play this on a black and white or green screen monitor, shame on you! To really appreciate this one, you need a full sized galactic background, because the star fields and rotating galaxies are terrific.

You are the firing technician (that's what they call 'em in the military), located in a gunnery pod. The base, Alpha IV is being attacked by enemy ships from another galaxy. Your job is to protect the base by destroying the enemy ships.

The master control panel shows whether the nearest intruder is to the left or right, how much time you've taken, the amount of damage to your pod, the base and the enemy. The cross-hairs of the laser cannon enable you to zero in on the enemy. Once the cannon has been fired, you must wait until the shot passes out of range or hits the target.

The incoming ships aren't just trying to destroy the base, they shoot at you most of the time. You can blast the incoming shots, so they don't do any damage to your turret. The number of enemy ships that must be shot down depends on the difficulty level chosen at the start of the game. This ranges from 10 to 50 ships. If you don't protect the mother ship well enough, it blows up. Win or lose, your performance is ranked from "tourist" to "superman," based on the length of time you took, how many of the enemy and their incoming torpedoes you destroyed, how many hits the turret took and the level of difficulty.

The documentation with this program is compact, but sufficient. Except for a few fundamentals and playing tips, the best way to get started with the game is to play it. It is, however, addicting. So don't start playing if you have somewhere to be in half an hour.

Even for an old lady like me, this is an enjoyable game. It's available on disk or tape for $34.95, and I recommend it highly.

Continued from page 51

I have written my own Address Book program and I can bring up the information by searching just the last name. If I'm not sure of the spelling, I search just the first (or any) portion of the last name. If I can't remember the last name I can search for all the ROBERT's or whatever. I can bring up everyone with the same last name (families), or everyone that lives in a particular City or State or Zip Code or portion of a Zip Code.

Being able to bring up a string by matching any portion has many possibilities.

Continued from page 86

COMMODORE INTERNATIONAL ANNOUNCES $1 BILLION SALES LEVEL ACHIEVED IN CALENDAR 1983

Commodore International Limited announced that the company had achieved record sales of over $1 billion for the calendar year ended December 31, 1983, making Commodore the first company in the microcomputer industry to report this milestone sales level. This compares to calendar 1982 sales of $458 million for Commodore, a gain of more than 100%.

Commodore's entire product line, including the C-64, VIC-20, PET, and CBM models, achieved record sales levels in 1983. Commodore produced more computers than any other company in the world. Nearly 50% of Commodore's sales came from outside the United States.

Continued from page 50

```
3110 GOTO410
3120 IFQ=0THEN3200
3130 PRINTLEFT$(P$,2);SPC(11);""[com-4]ARE[sp
     ]YOU[sp]SURE[sp, 2 times]Y/N[sp][blk]"":
     POKE53247,3
3140 GETEN$:IFEN$=""""THEN3140
3150 IFEN$=""Y""THEN2280
3160 IFEN$=""N""THEN410
3170 GOTO3140
3200 PRINT""[clr]"":SYS64738
```


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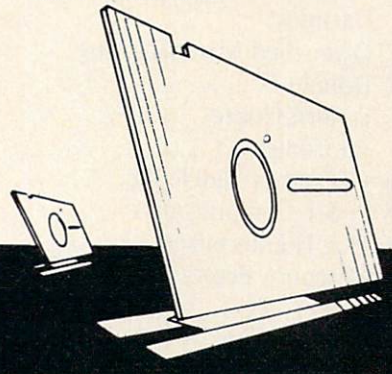

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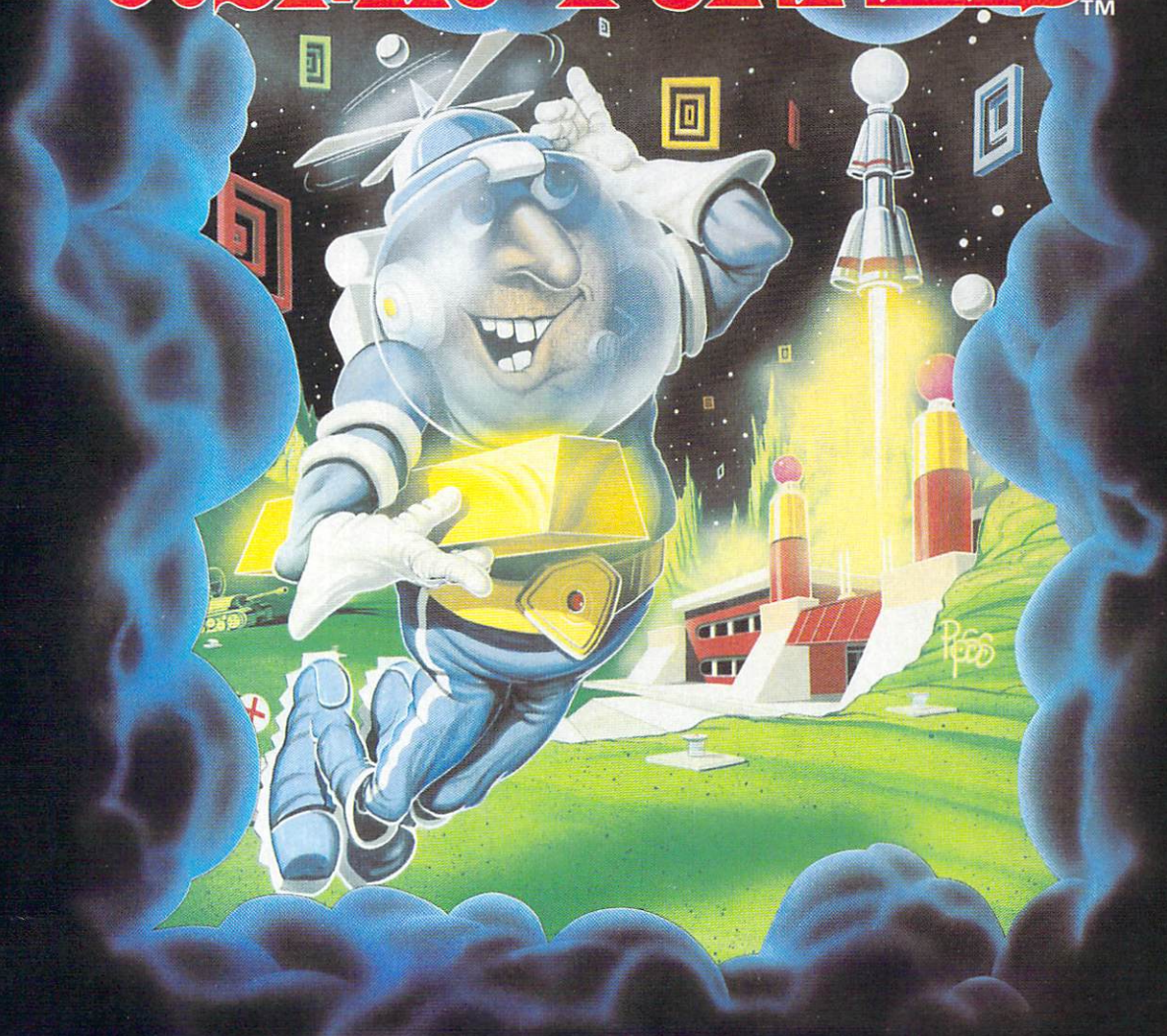

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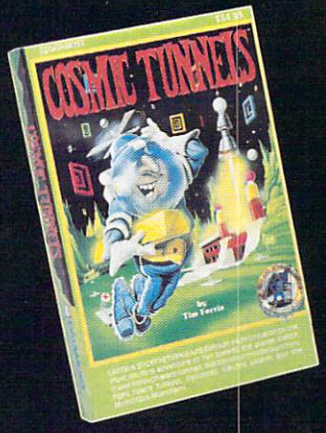

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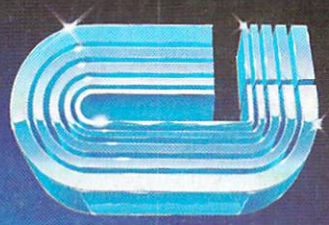

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